



# **Western Market and Infrastructure Assessment**

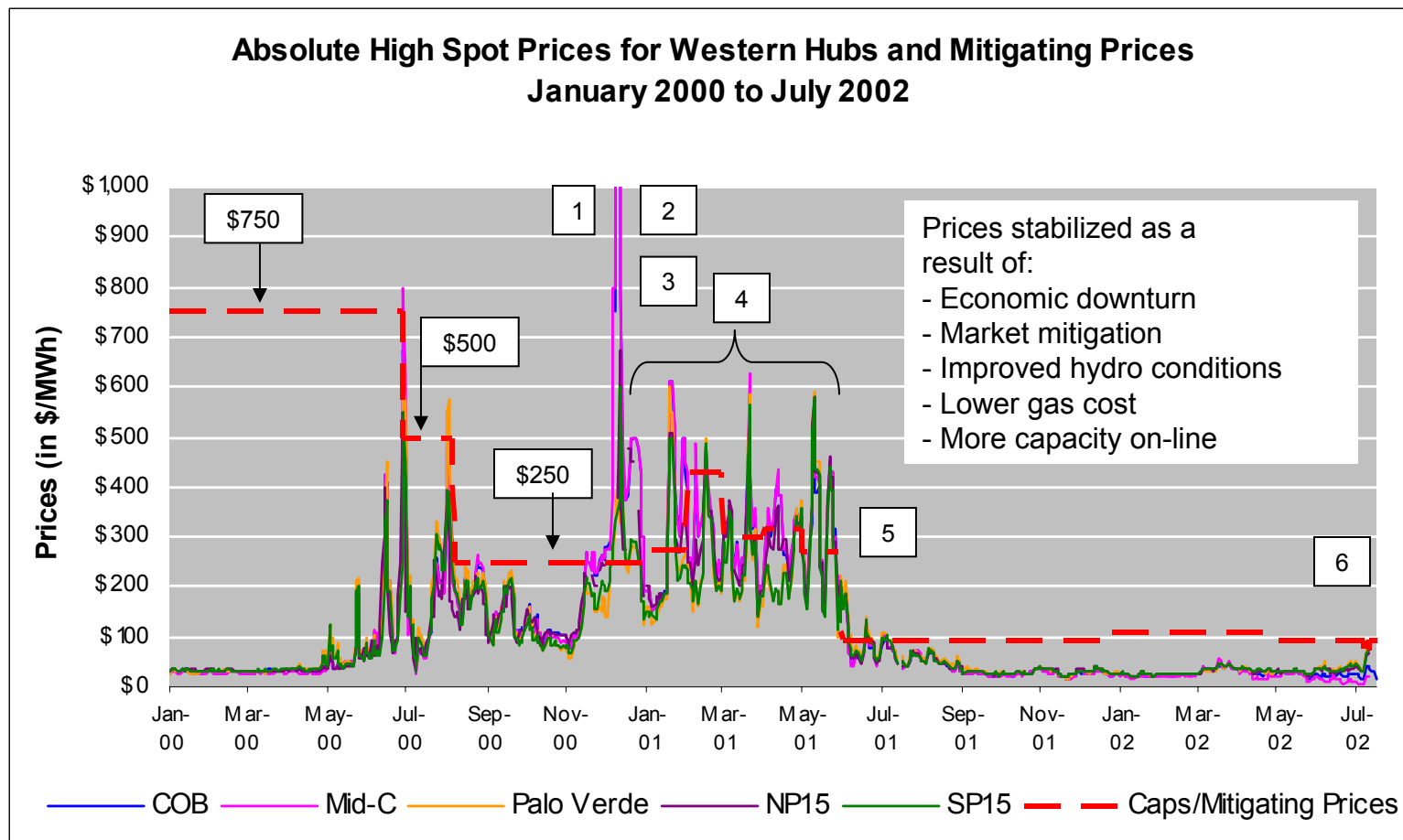
**FACTORS AFFECTING  
ELECTRIC AVAILABILITY AND PRICES**

**July 2002**

# **Western Electric & Natural Gas Prices**

- **Consumption & economic growth outpaced new supply from 1995 - 2000.**
- **Electric and natural gas prices skyrocketed across the West from May 2000 through May 2001.**
- **Electric and natural gas prices have declined and stabilized since July 2001, due to economic slowdown, conservation programs, long-term contracts for electricity, and FERC's mitigation measures.**

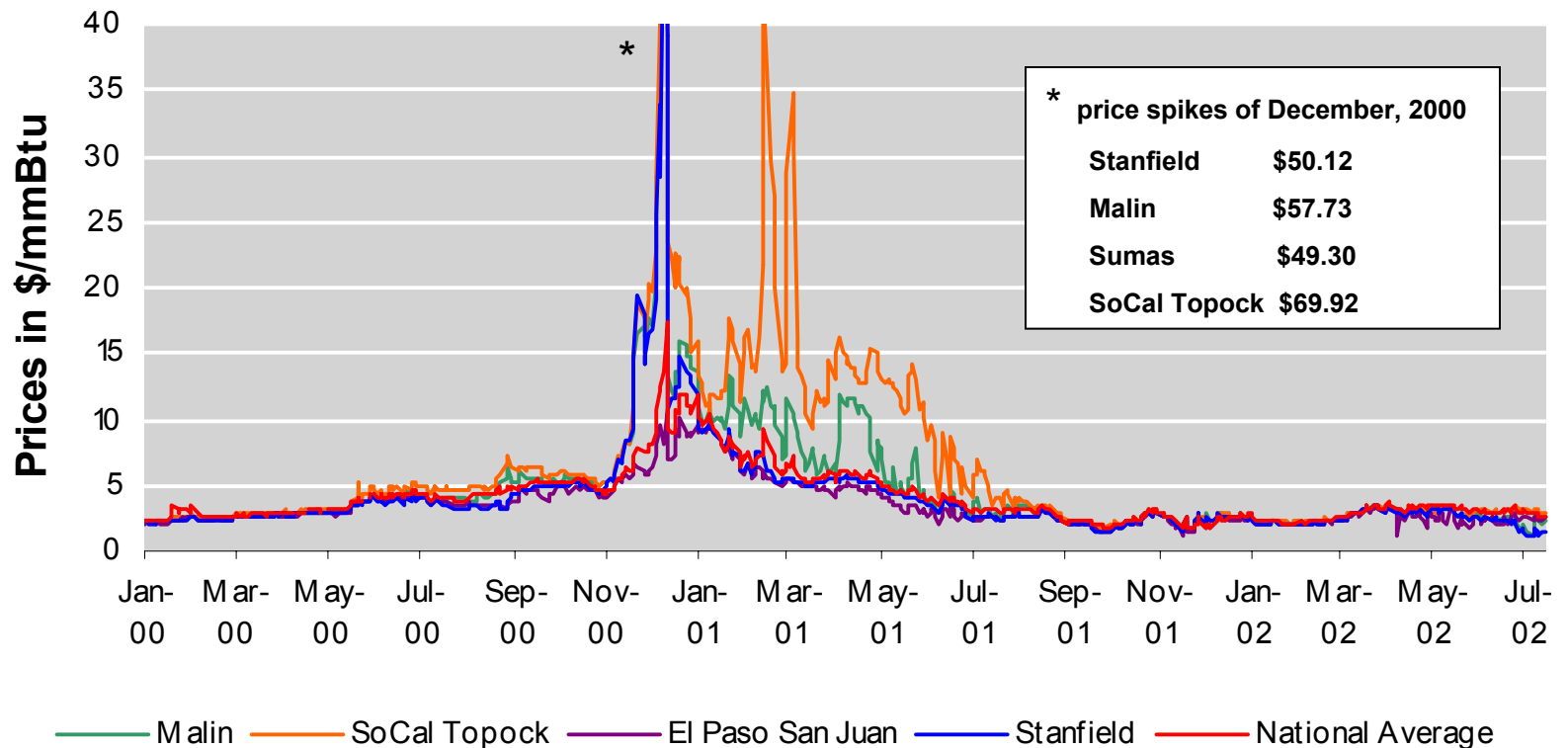
# Western states electric prices have fallen and stabilized in the short-term



1. On December 11, 2000, electric spot prices soared to \$3000 at COB and \$5000 at Mid-C.
2. CAISO \$250 breakpoint, December 8 through December 31, 2000.
3. FERC \$150 breakpoint, January 1 through May 28, 2001.
4. FERC established ceiling price for Stage Three Emergency on March 9, 2001:  
\$273 for January, \$430 for February, \$300 for March, \$318 for April and \$267 for May, 2001.
5. Price mitigation in effect for California only during reserve deficiency hours, May 29 through June 19, 2001. \$108 triggered on May 30, 2001. Non-emergency price at \$91.87, which is 85% of price declared during last Stage One Emergency. Westwide Price Mitigation began on June 20, 2001.
6. On July 9, 2002, the CAISO issued a Stage One alert and dropped the cap to \$57.14/MWh. Price cap was reset at \$55.26 on July 10 triggered by a Stage Two. On July 11, 2002, the FERC restored the cap to its previous level of \$91.87/MWh and fixed it as a "hard cap".

## Natural gas prices have stabilized in the short term

### Common High Natural Gas Spot Prices at Western Hubs Compared with National Average



Source: Gas Daily

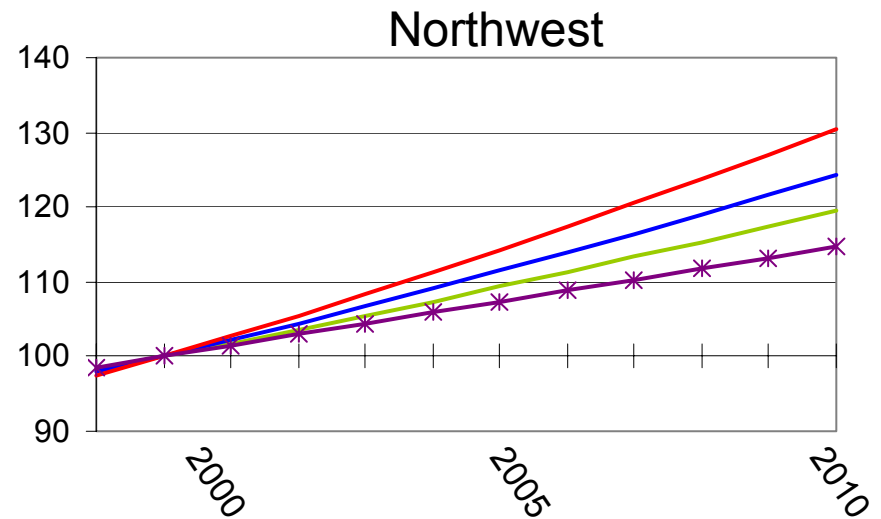
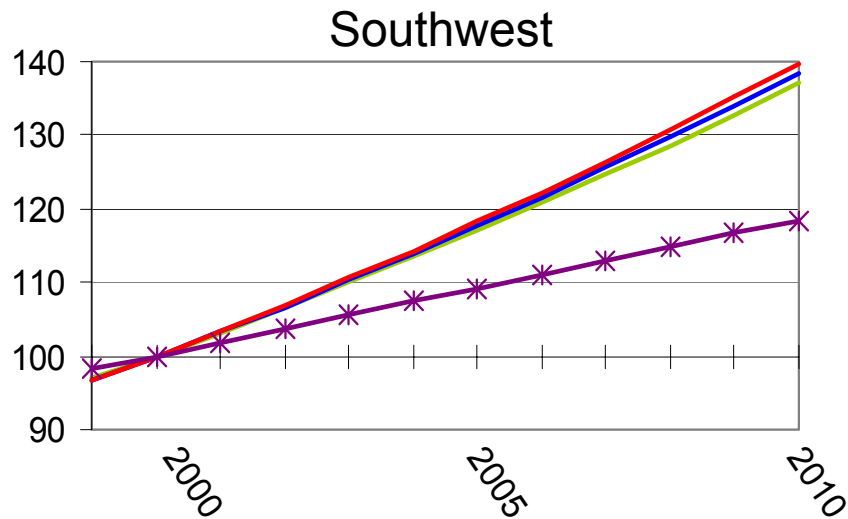
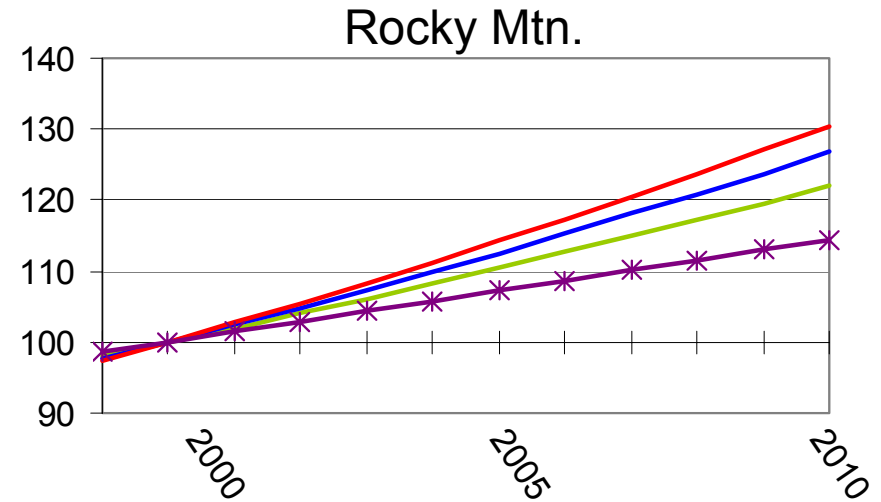
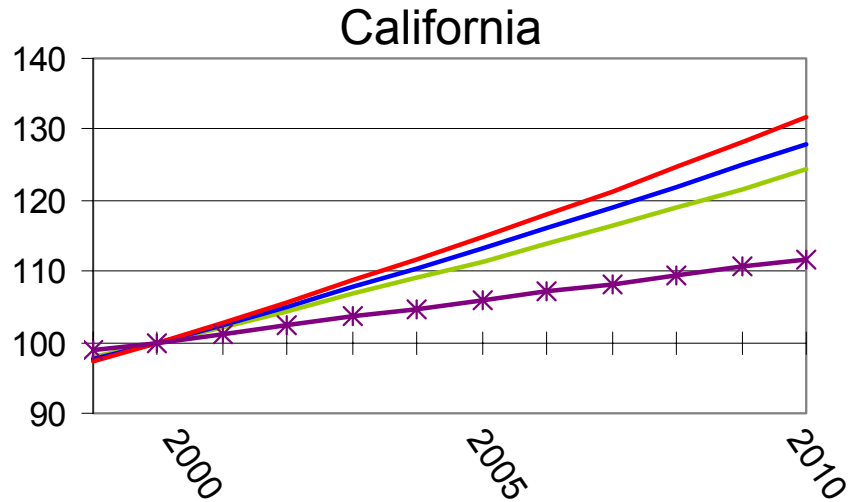
# **KEY FACTORS AFFECTING WESTERN ELECTRIC MARKETS**

## **Factor 1: Peak Demand and Demand Response**

- **California relies on imports to meet peak demand, during the past five years California has imported up to 20% of the states energy needs.**
- **Electric demand growth in regions bordering California has grown significantly, reducing the amount of electricity available to export to California.**
- **Demand response programs were important in avoiding blackouts in California in 2001, reducing peak demand by 10-15%. However, frequent interruptions in supply have reduced participation in these programs. Conservation and demand response programs in the remainder of the West are minimal.**
- **Return of El Nino will moderate temperatures in California and the Northwest, but could reduce regional hydroelectric supply.**

# Electricity consumption grows at a faster rate than population

(All data are indexes, with year 2000 = 100)

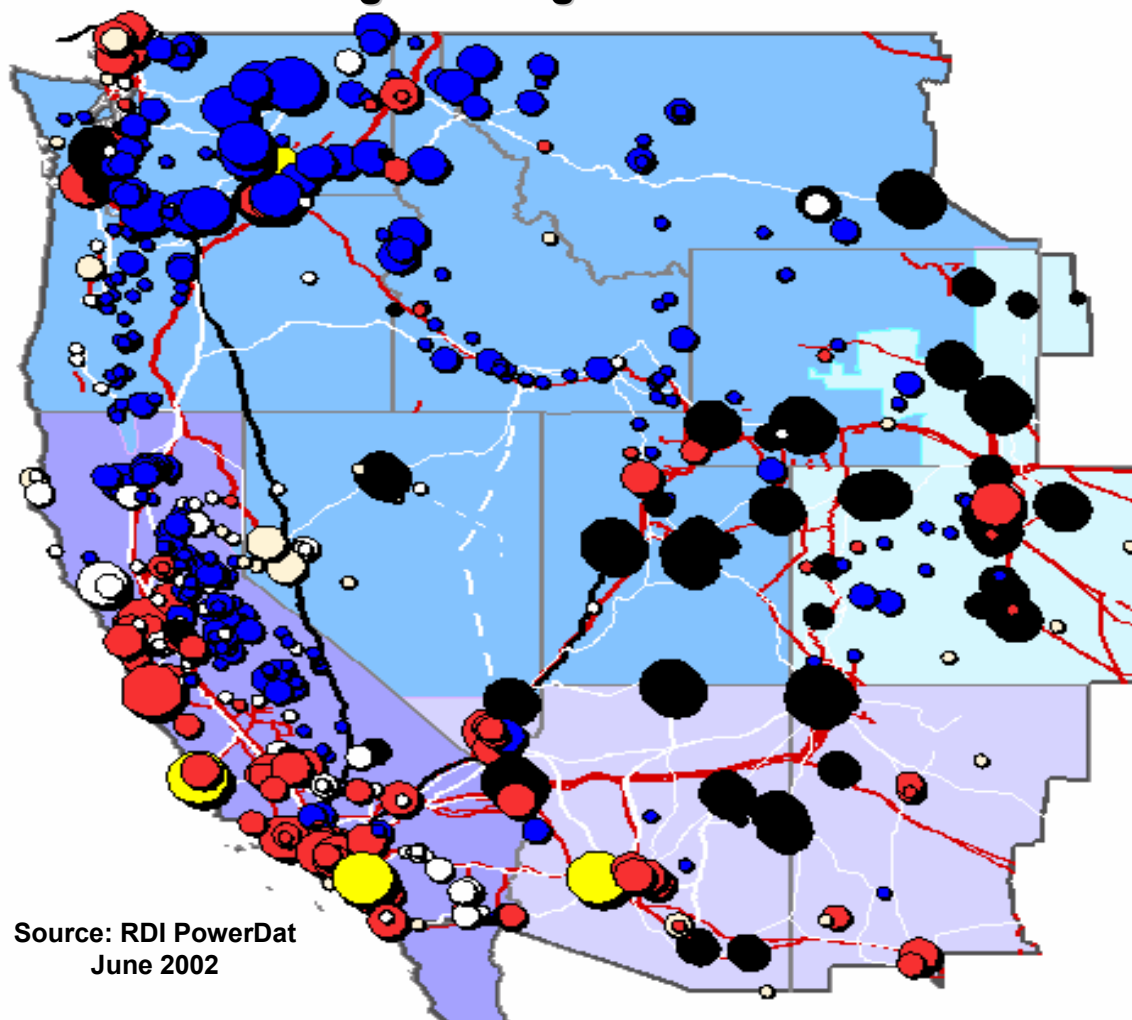


Retail Electric Sales Growth Estimates — Low — Medium — High; \* Population Growth Estimate  
Sources: retail electric sales from EIA; sales growth rates from DRI-WEFA and NERC; population from US Census Bureau

## **Factor 2: Generation Capacity, Availability, and Hydro Vulnerability**

- **Older fossil fuel units are less cost-effective and experience frequent outages for maintenance, which reduces reliability. Consequently, these units contribute to increased prices through higher fuel costs and loss of availability due to frequent scheduled and unscheduled outages.**
- **Loss of large baseload units can trigger price volatility.**
- **The incentive to build new generation is diminishing since low prices and spark spreads indicate lower returns.**
- **Regulatory and environmental restrictions limit plant running times, siting locations, and output.**
- **Hydro generation and the amount available for export to California varies greatly.**
- **Weather uncertainties have compounded as El Nino conditions develop. Based on historical trends, the Pacific NW is expected to be drier than normal, California is expected to be warmer and wetter, and the Rockies and SW drier. The two recent El Ninos have lasted two years.**

**Each western sub-region has a dominant fuel source; adverse hydro conditions in the Northwest increases California's dependency on gas-fired generation**

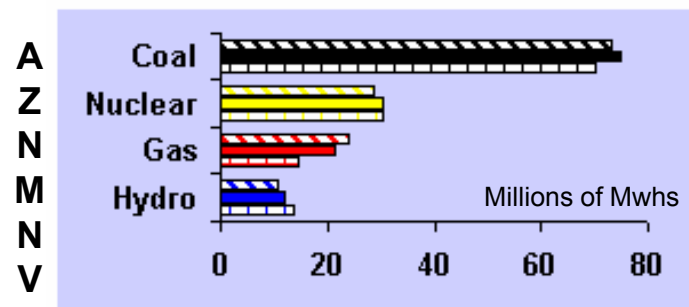
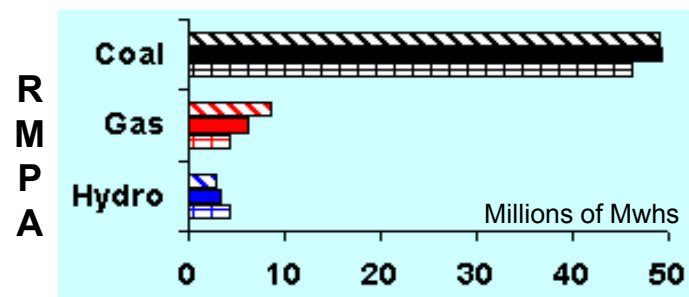
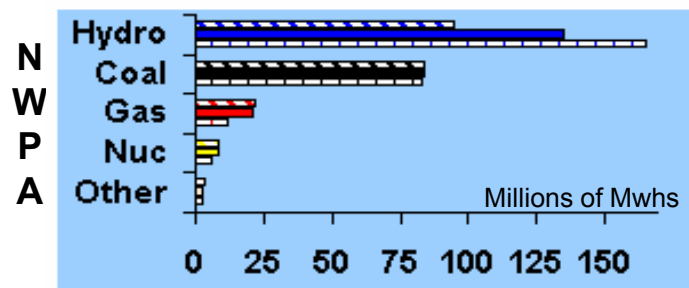
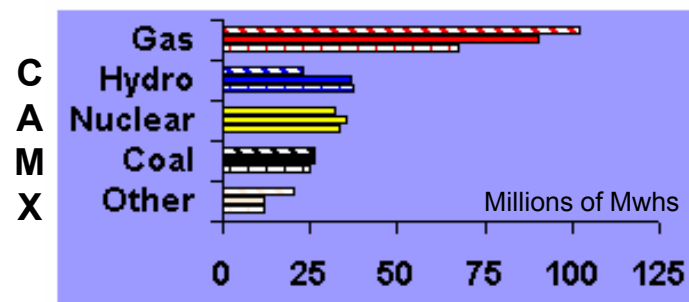


Source: RDI PowerDat  
June 2002

— Major Natural Gas Pipelines  
— Major DC Transmission Lines

White Lines = Major AC Transmission Lines

■ Coal ■ Nuclear ■ Gas ■ Hydro ■ Fuel Oil ■ Other

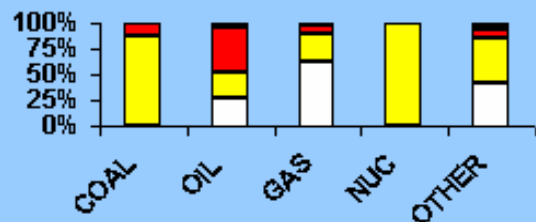


▨ 1999 ■ 2000 ▤ 2001

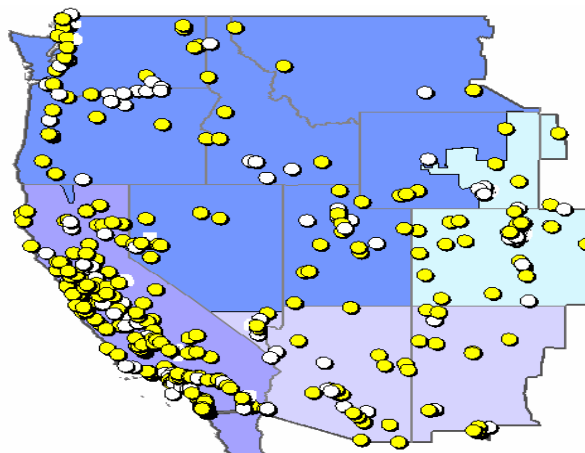


# AGE OF NON-HYDRO ELECTRIC PLANTS

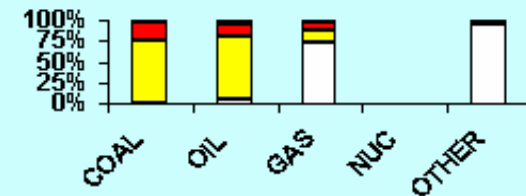
## NWPA



The West-particularly California has many older fossil plants with lower efficiency rates & operational reliability

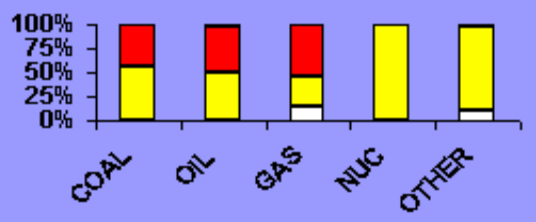


## RMPS

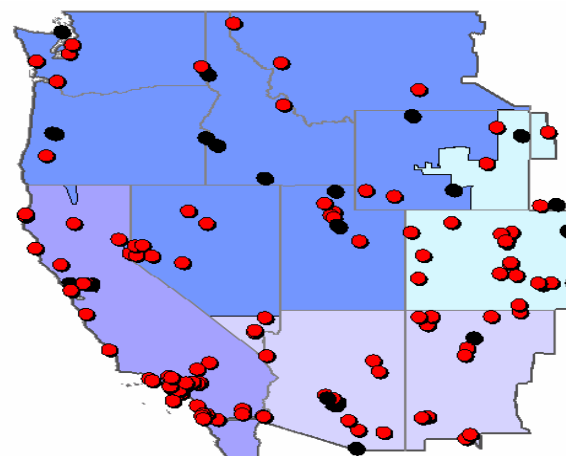


Fuel Type	<10	10 to 30	30 to 50	>50	Total
COAL	80	5,357	1,552	164	7,153
OIL	12	206	44	11	273
GAS	2,072	418	260	65	2,815
NUC	0	0	0	0	0
OTHER	212	8	0	0	221
TOTAL	2,377	5,988	1,856	240	10,461
% of Total	23%	57%	18%	2%	100%

## CAMX



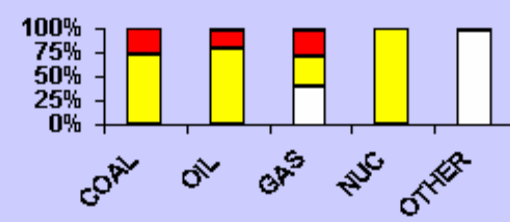
Fuel Type	<10	10 to 30	30 to 50	>50	Total
COAL	0	2,153	1,660	0	3,813
OIL	9	717	694	30	1,450
GAS	4,710	9,941	16,659	236	31,546
NUC	0	4,555	0	0	4,555
OTHER	630	5,201	179	0	6,010
TOTAL	5,349	22,566	19,192	266	47,374
% of Total	11%	47%	41%	1%	99%



Tables reflect fuel types in megawatts

□ Less Than 10    ■ 10 to 30    ■ 30 to 50    ■ More Than 50

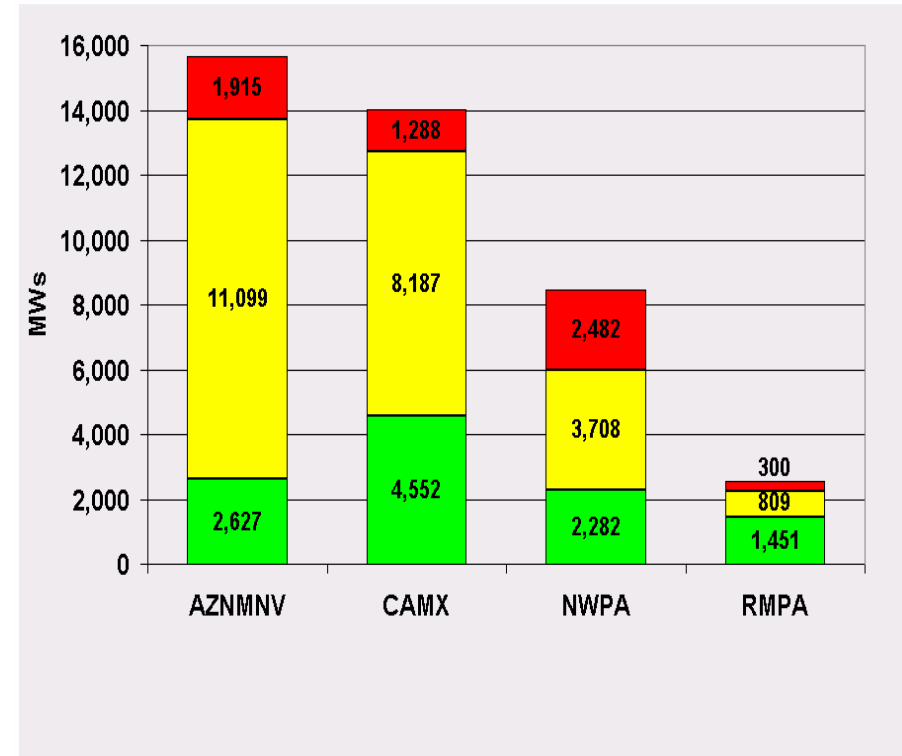
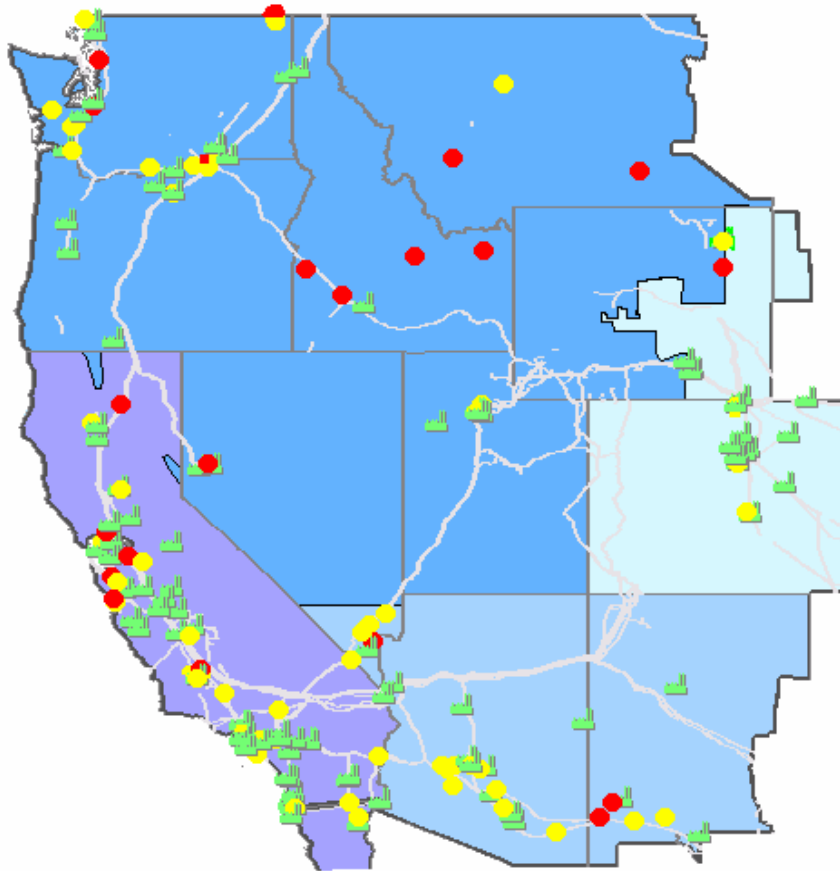
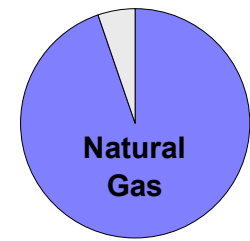
## AZNMNV



Fuel Type	<10	10 to 30	30 to 50	>50	Total
COAL	0	7,910	2,828	0	10,739
OIL	0	173	42	4	219
GAS	3,773	3,108	2,637	186	9,704
NUC	0	4,210	0	0	4,210
OTHER	27	0	0	0	28
TOTAL	3,800	15,401	5,507	190	24,898
% of Total	15%	62%	22%	1%	100%

Source: RDI PowerDat June 2002

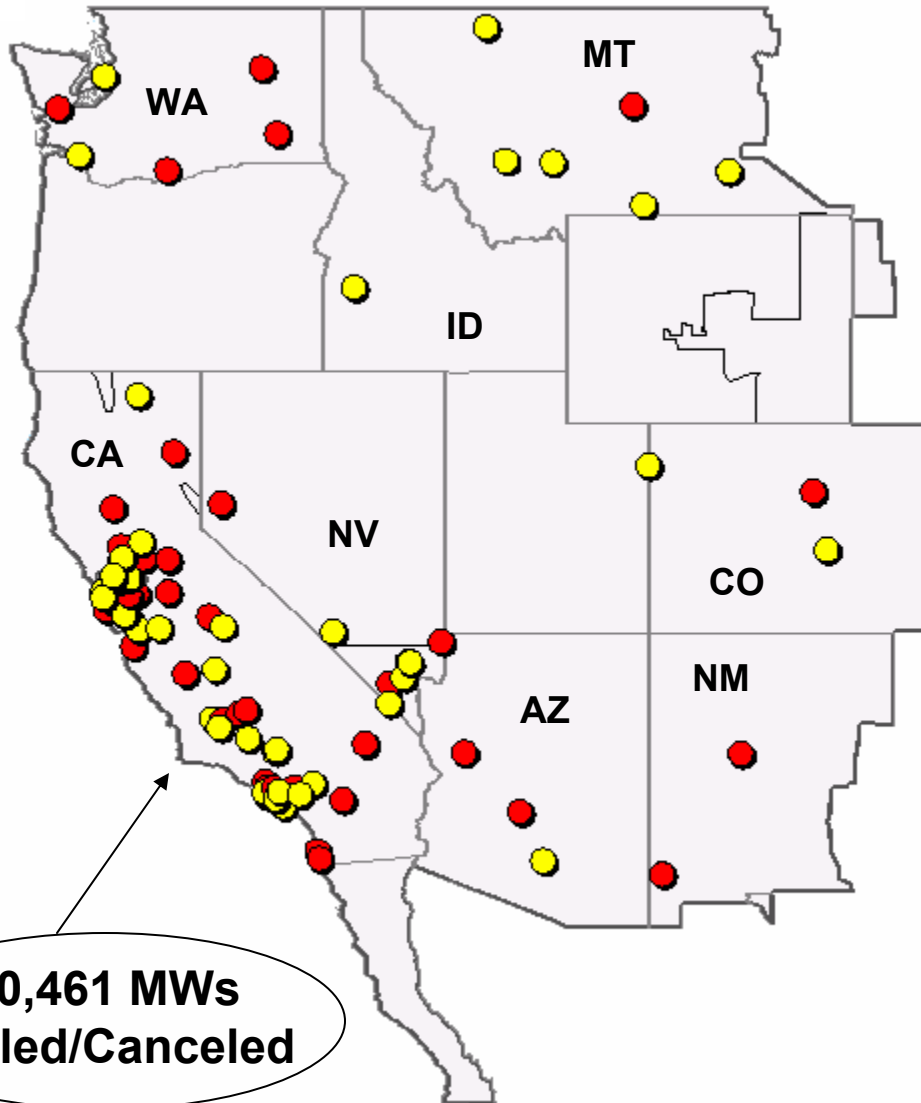
# 95% of the new generation entering western markets will be fueled by natural gas



- Advanced Development 2002-2005
- Under Construction 2002-2005
- Additions Jan 2000- May 2002

Source: RDI NewGEN and PowerDat June 2002

**Lower spark spread outlooks, thinner profit margins, and industry uncertainty diminish the incentive to build new power plants. Many projects have been tabled or canceled particularly in California**



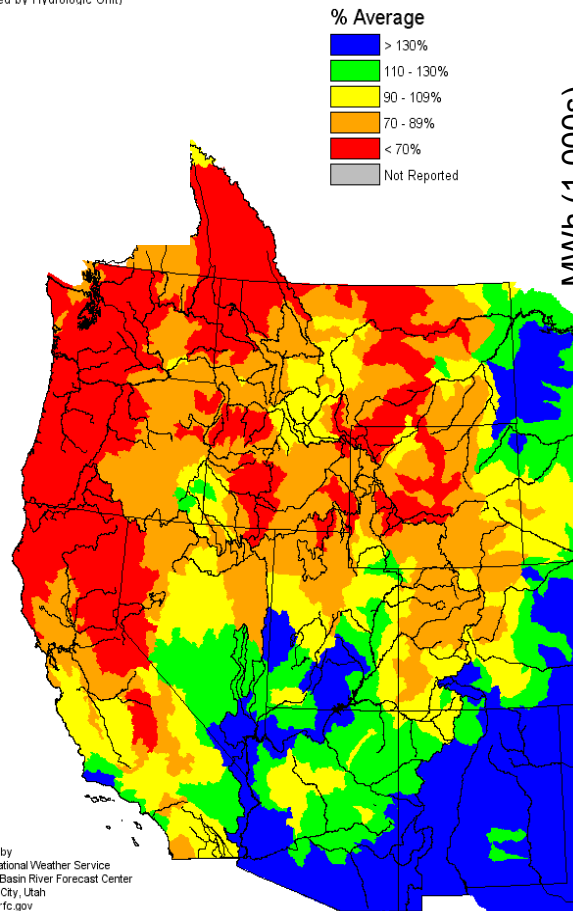
**20,461 MWs  
Tabled/Canceled**

STATUS	YEAR	TOTAL (MWs)
Tabled	2000	1,403
	2001	8,732
	2002	14,363
	Total	<b>24,498</b>
Canceled	2000	1,042
	2001	9,752
	2002	4,797
	Total	<b>15,591</b>
Total Tabled & Canceled	All	<b>40,089</b>

Source: RDI NewGEN June 2002

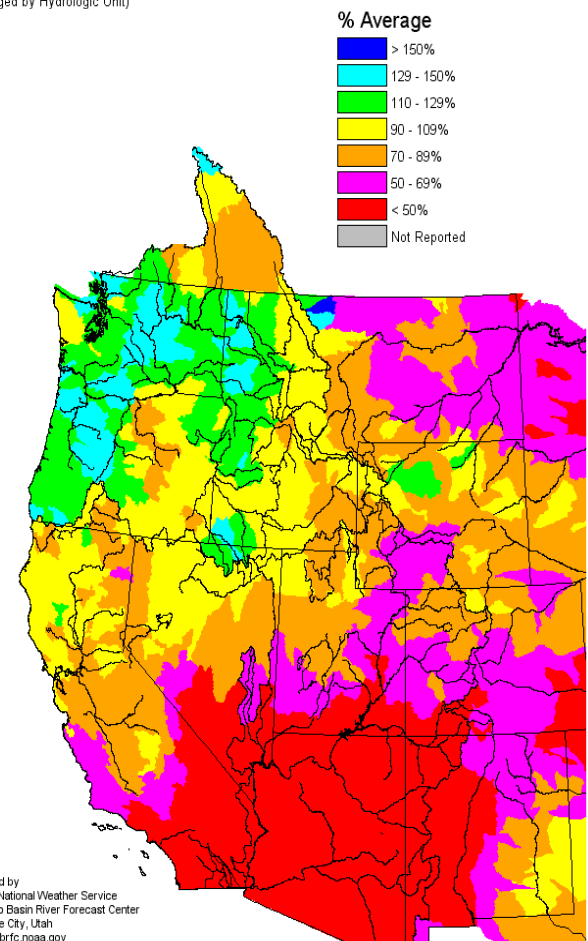
# Hydropower availability has improved for California and the Pacific Northwest, but the drought has shifted to the Southwest and the Rockies. Columbia River headwater reservoir levels remain below normal, providing little reserve if drought returns.

Seasonal Precipitation, October 2000 - March 2001  
(Averaged by Hydrologic Unit)

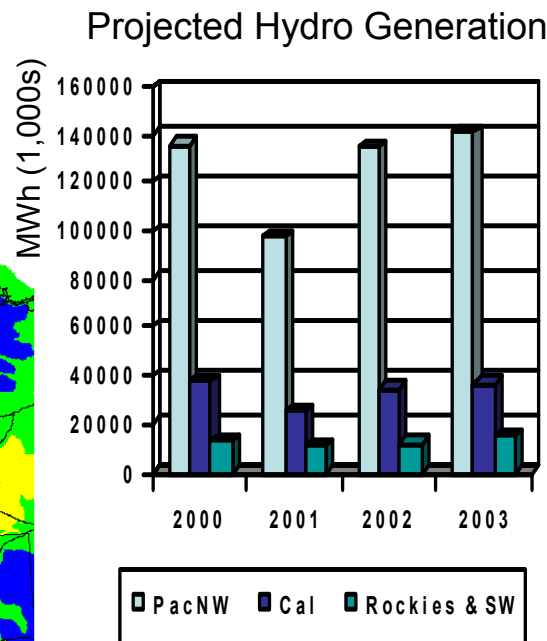


Prepared by  
NOAA, National Weather Service  
Colorado Basin River Forecast Center  
Salt Lake City, Utah  
www.cbrfc.gov

Seasonal Precipitation, October 2001 - March 2002  
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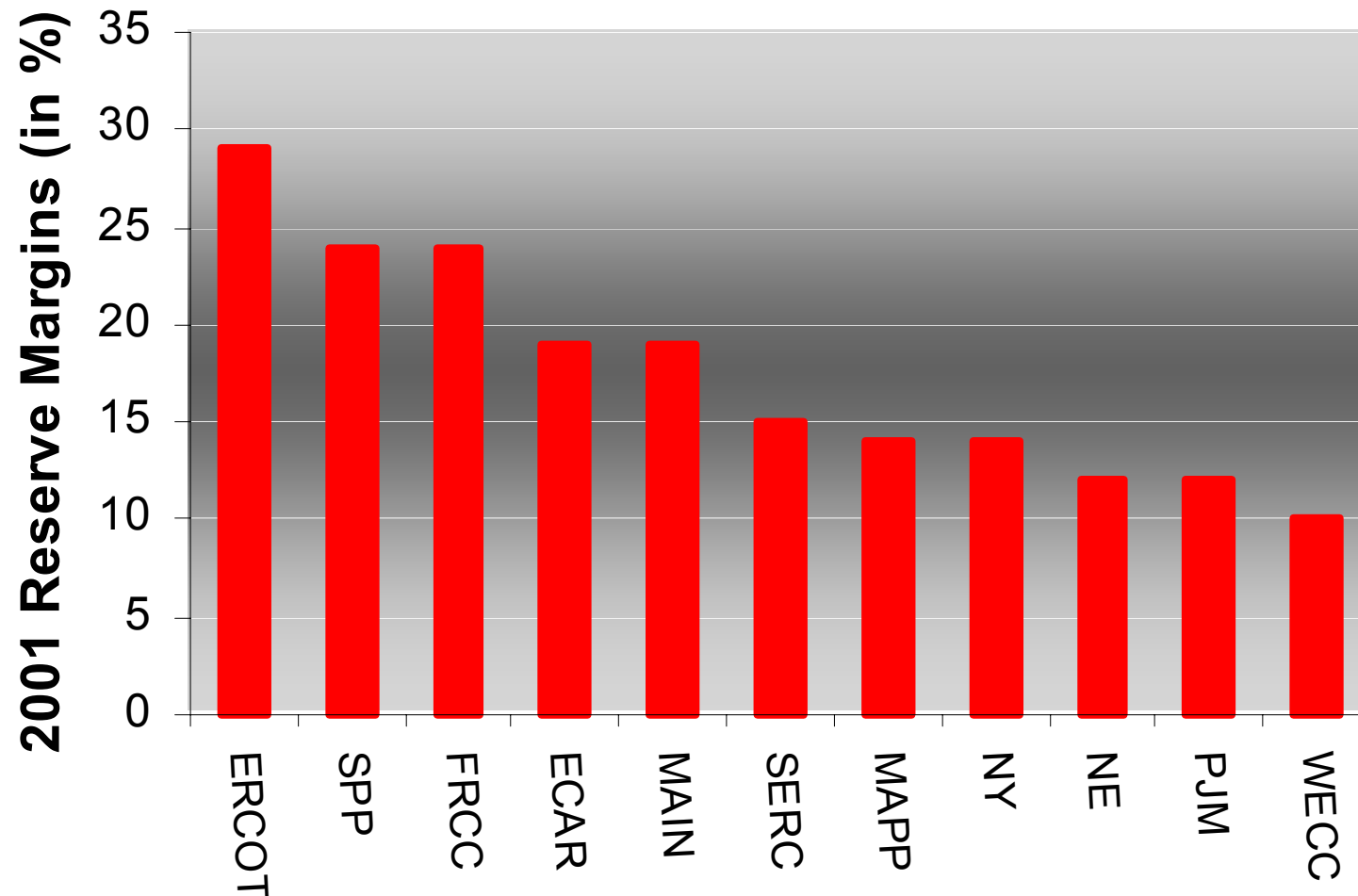
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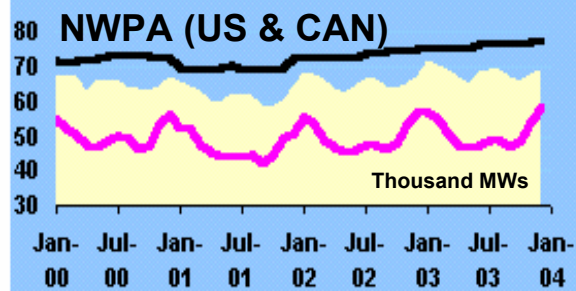
## **Factor 3: Reserve Margin**

- **Adequate reserve margins maintain reliability and foster competition. Low reserve margins send signals to build infrastructure.**
- **Significant variations in regional reserve margins signals the need for additional transmission.**
- **California and the Pacific Northwest's reserve margins will continue to be heavily influenced by variations in hydro availability and import limits.**
- **Operating reserves are dependent on accurate data inputs (i.e., deratings for fossil generation, outages, and timely demand data, including accurate DSM estimates).**
- **WECC reserve margins are the lowest in NERC.**

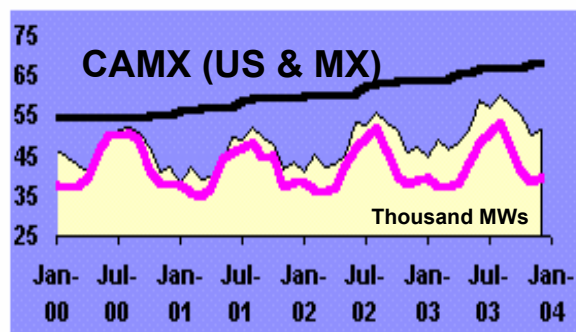
## WECC Reserve Margins are among the lowest in the country



Source: Spring 2002 CERA Watch *Power Sector Outlook 2002: Survival of the Fittest*

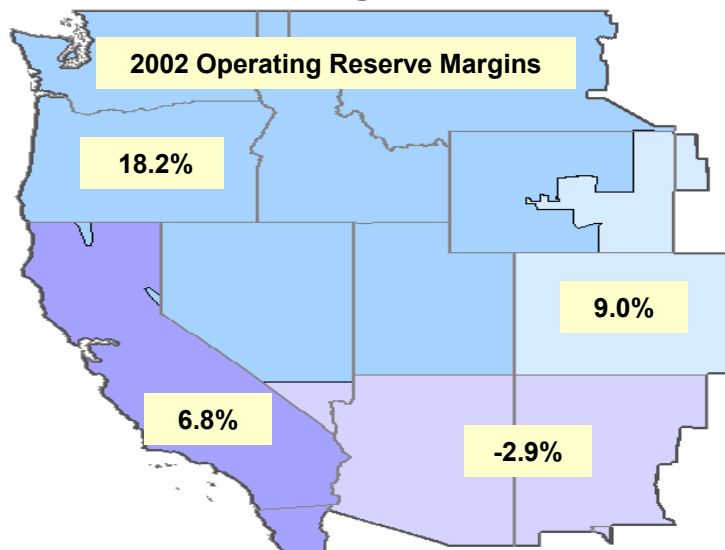


Winter Peak	Dec-00	Jan-01	Dec-02	Dec-03
Peak Demand	56,182	52,594	57,218	58,196
Available Resources	67,088	66,264	67,612	69,334
Total Resources	72,898	70,054	75,799	77,521
Reserve Margin at Peak (wo/transfers)	29.8%	33.2%	32.5%	33.2%
Operating Reserve Margin at Peak (wo/transfers)	19.4%	26.0%	18.2%	19.1%



Summer Peak	Aug-00	Aug-01	Aug-02	Aug-03
Peak Demand	51,213	48,351	52,255	53,207
Available Resources	52,013	52,185	55,832	60,060
Total Resources	54,924	59,360	63,006	67,236
Reserve Margin at Peak (wo/transfers)	7.2%	22.8%	20.6%	26.4%
Operating Reserve Margin at Peak (wo/transfers)	1.6%	7.9%	6.8%	12.9%

## Generating adequacy varies by sub-region; CAMX, AZNMNV, & RMPA face continuing tight operating reserve margins through 2002

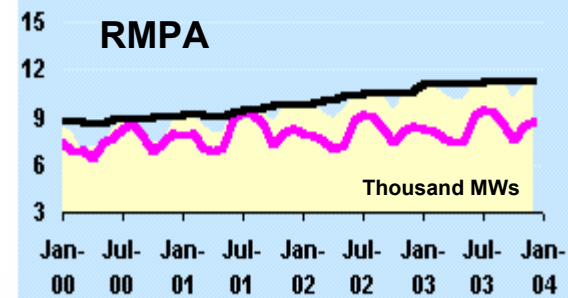


Operating Reserve Margin: difference between available capacity (excluding transfers) and peak demand

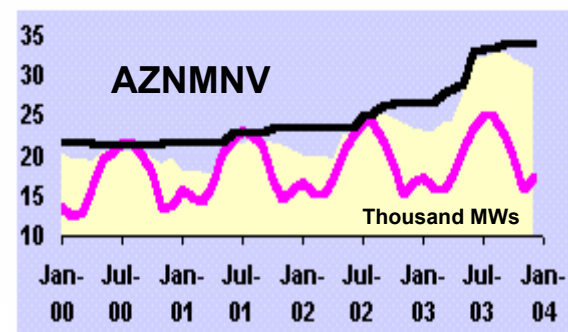
Reserve Margin: difference between total resources (excluding transfers) and peak demand

— Total Resources    Available Resources    Peak Demand

Source: Western Electricity Coordinating Council  
2001-2002 Load & Resource Reports and RDI  
PowerDat & NewGen June 2002

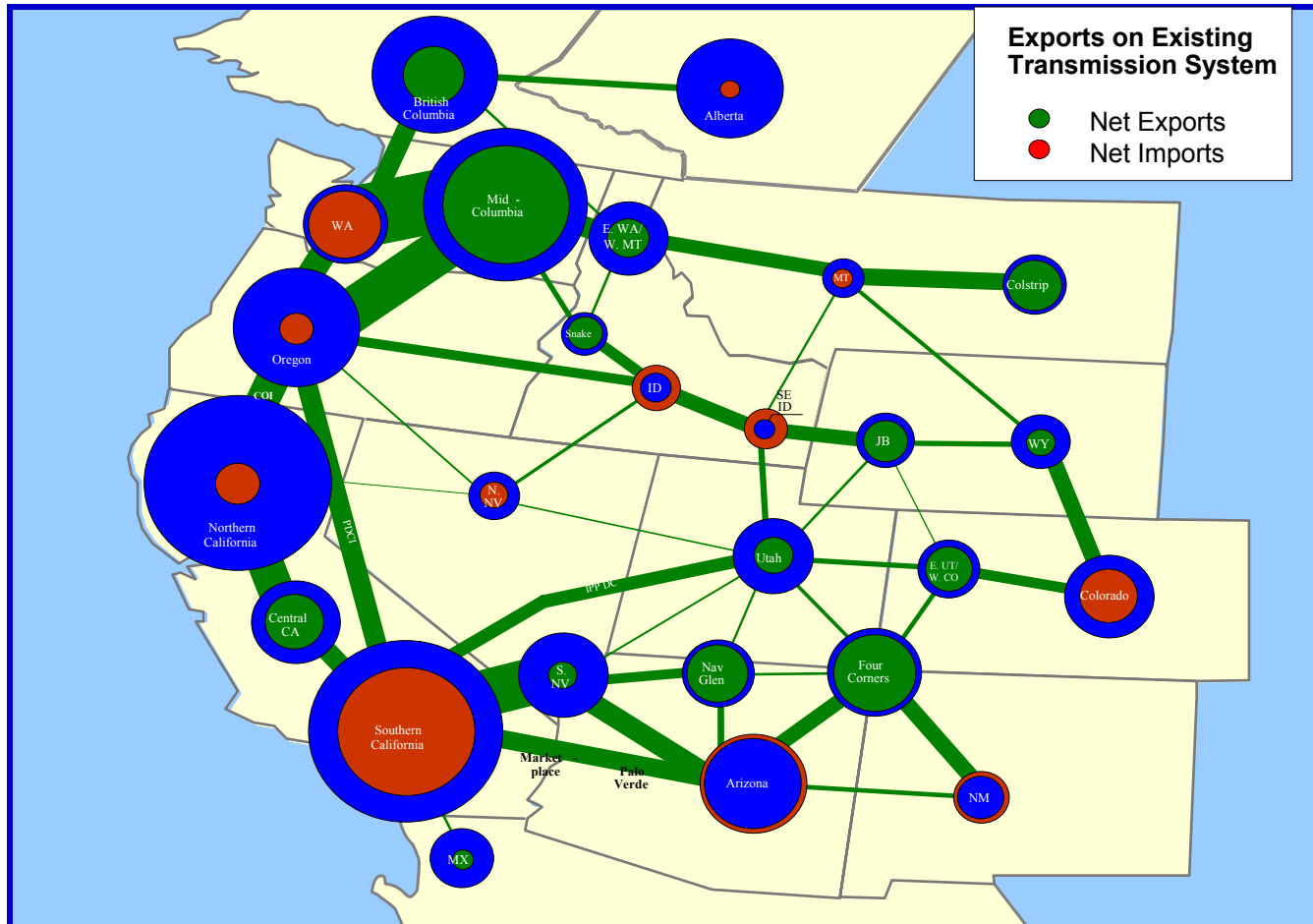


Summer Peak	Aug-00	Jul-01	Jul-02	Jul-03
Peak Demand	8,589	9,331	9,284	9,574
Available Resources	8,643	9,052	10,124	10,814
Total Resources	8,932	9,464	10,536	11,226
Reserve Margin at Peak (wo/transfers)	4.0%	1.4%	13.5%	17.3%
Operating Reserve Margin at Peak (wo/transfers)	0.6%	-3.0%	9.0%	13.0%



Summer Peak	Jul-00	Jul-01	Jul-02	Jul-03
Peak Demand	21,724	23,360	24,280	25,274
Available Resources	20,347	21,508	23,587	32,167
Total Resources	21,426	22,916	24,995	33,575
Reserve Margin at Peak (wo/transfers)	-1.4%	-1.9%	2.9%	32.8%
Operating Reserve Margin at Peak (wo/transfers)	-6.3%	-7.9%	-2.9%	27.3%

**California is a net electricity importer from across the West. In the past five years California has imported up to 20% of the states electric needs.**



The blue market circle indicates size of load. Width of green paths indicates the magnitude of transmission flows.

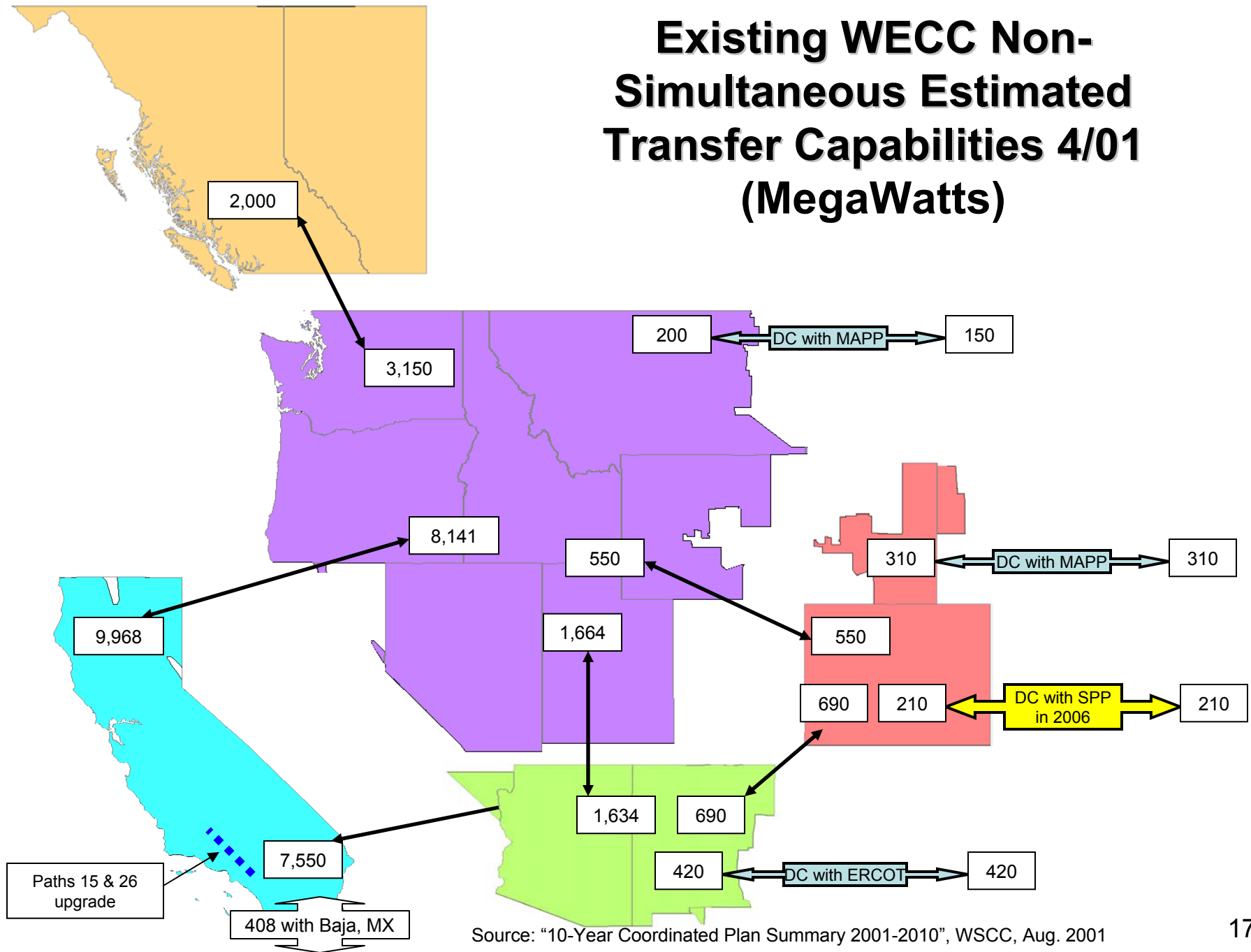
SOURCE: Western Governors' Association, *Conceptual Plans for Electricity Transmission in the West*, 2001. Imports: California Energy Commission, *Electricity Generation/Production data*, 1996-01.



## **Factor 4: Electric Transmission**

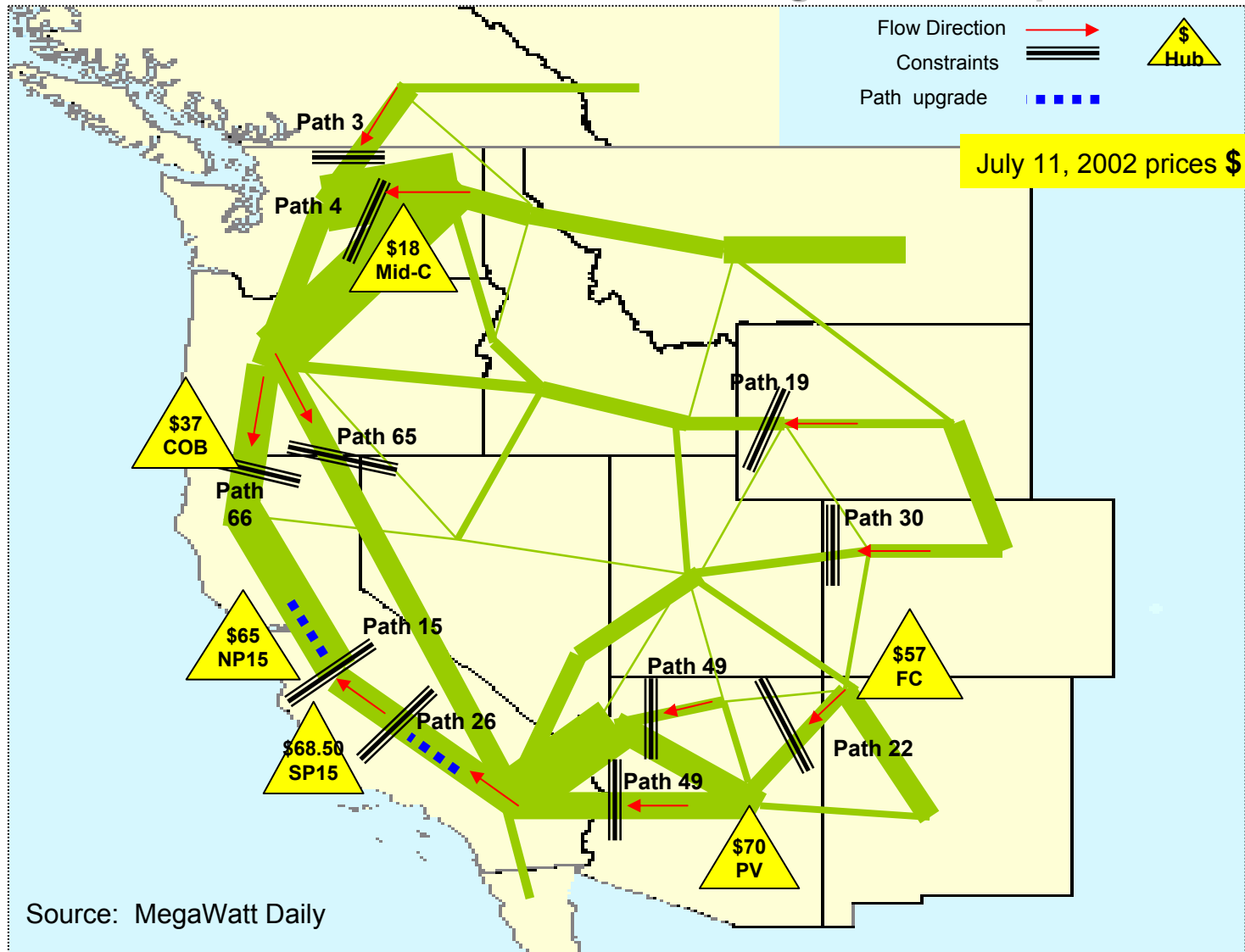
- **Imports to California are restricted by transmission transfer capabilities.**
- **Despite the West's dependence on cross-region electricity flows, no significant bulk transmission has been added in recent years.**
- **Western generation is typically located further away from load centers, increasing line-losses and costs.**
- **Transmission bottlenecks constrain the efficient distribution of resources and directly affect cost differentials (i.e., CA North/South and from Baja to CA).**
- **Low cost production areas may be less willing to continue exporting cheap supplies.**
- **Transmission additions take longer to bring on-line than new generation. Siting issues across geographic regions increase costs, particularly in light of the numerous stakeholders.**

# Existing WECC Non-Simultaneous Estimated Transfer Capabilities 4/01 (MegaWatts)



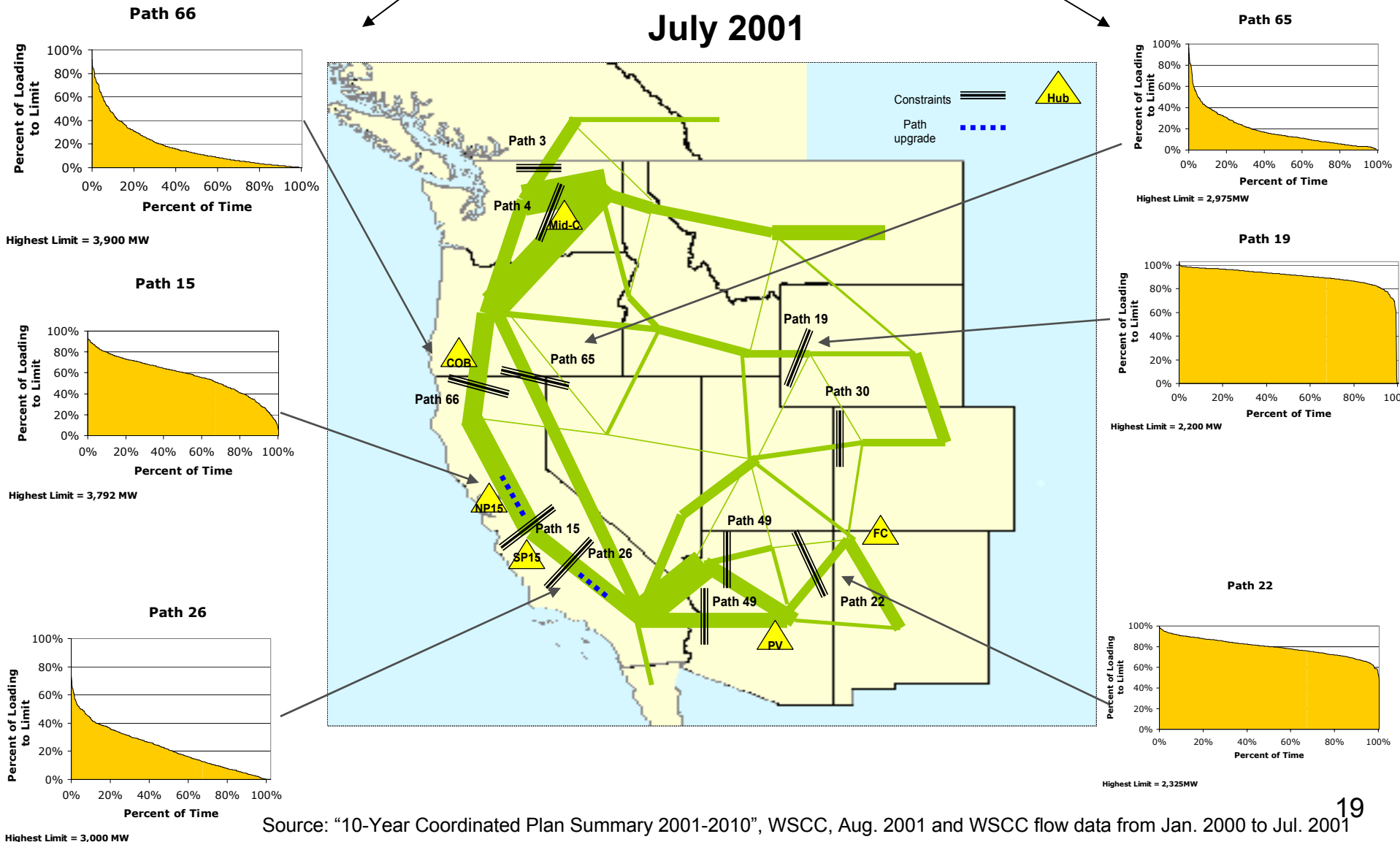
# Transmission constraints limit export capabilities which result in price differentials

## WECC Transmission Constraints and High Electric Spot Prices



# Western transmission systems are congested and need expansion

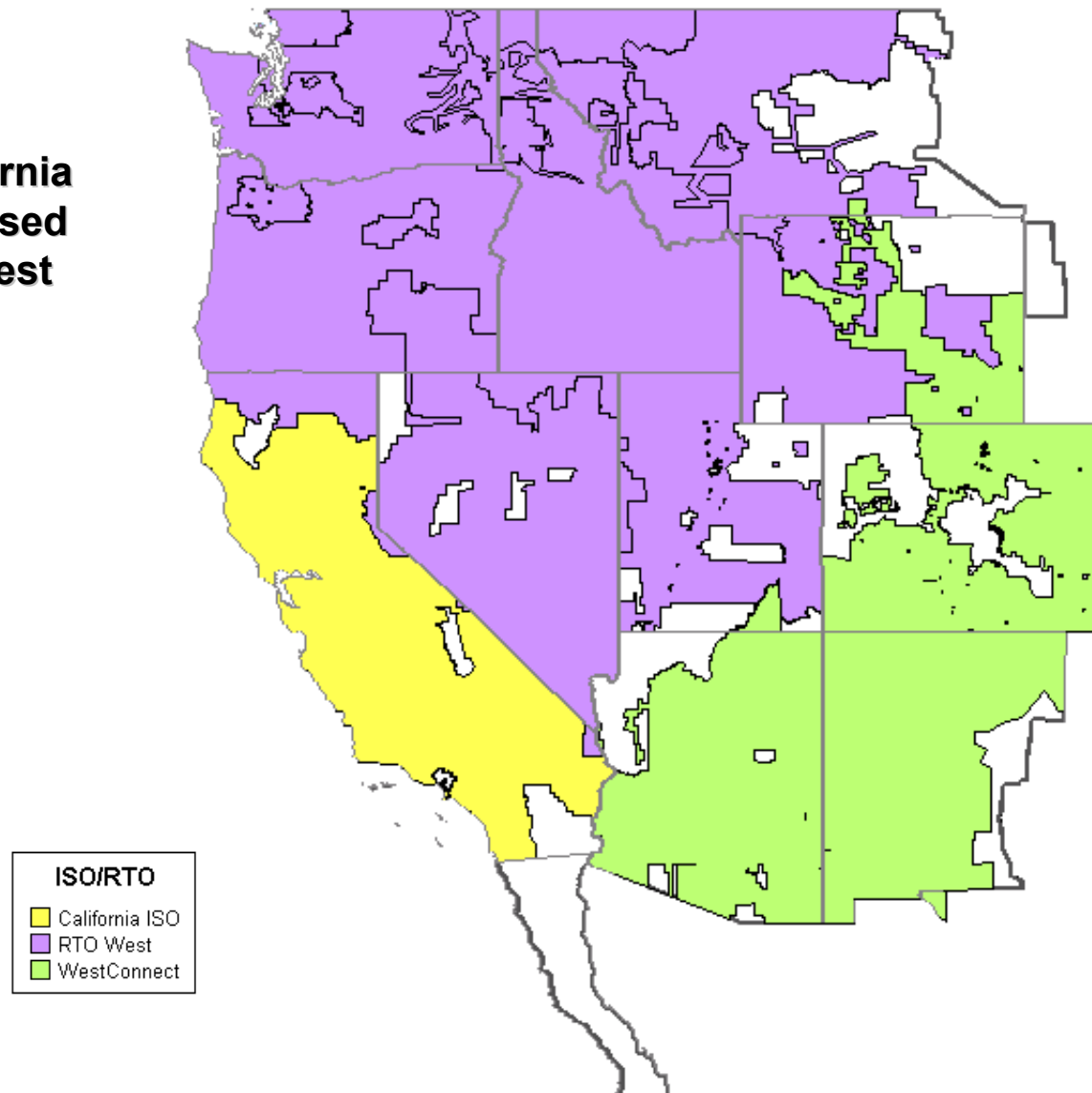
## Transmission Load Duration Curve July 2001



Source: "10-Year Coordinated Plan Summary 2001-2010", WSCC, Aug. 2001 and WSCC flow data from Jan. 2000 to Jul. 2001

## Coordinated transmission among regions will alleviate some congestion

**Existing California  
ISO and Proposed  
RTOs in the West**



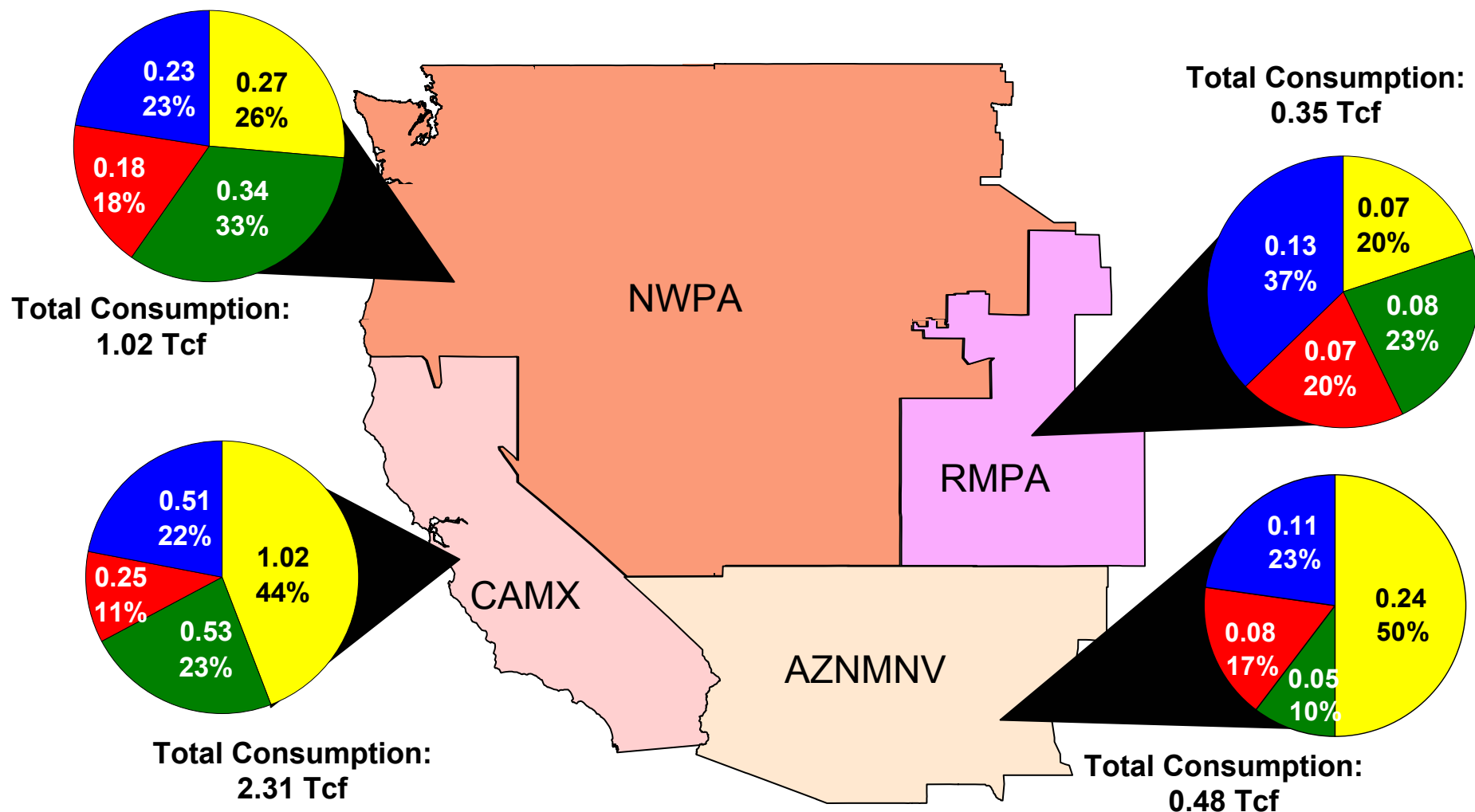
Source: RDI PowerMap

# **KEY FACTORS AFFECTING WESTERN NATURAL GAS MARKETS**

## **Factor 5: Gas Demand and Electric Demand for Gas**

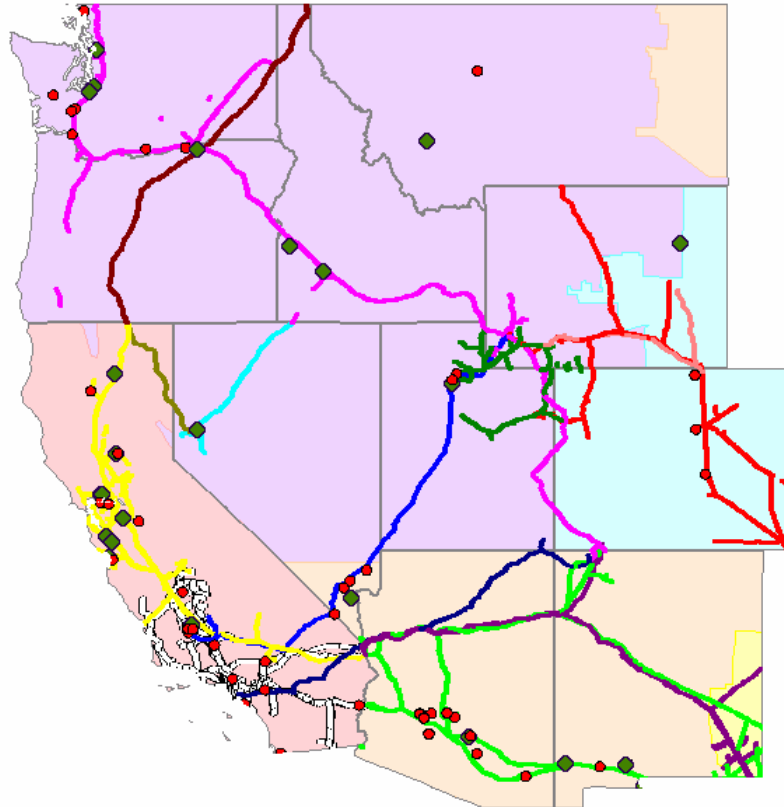
- **There is increased reliance on natural gas to fuel new power plants.**
- **Currently, gas demand is flat due to the lingering effects of recession and greater hydroelectric output.**
- **As more new high-efficiency electric generation capacity comes on line, it will displace low-efficiency older generation if the pace of new plant construction outpaces the growth of electric demand. In that event, the improved net fuel efficiency of the fossil fleet will stabilize electric demand for natural gas.**
- **Rapid population and economic growth in states bordering California is consuming gas that has historically been available for delivery to California.**

**In 2001, California was the major gas consumer in the WECC; electric generation and industrial use are, and should continue to be, the dominant consumption sectors (consumption by sector in Tcf/year)**



# Over the next five years, new power plant demand for natural gas could increase by 30% to 140% over current levels

NWPA	Gas-Fired Gens (MW)	Related Gas Demand (MMcf/d)
Existing	6000	572
2002	1936	189
2003	1876	183
2004	1288	126
2005	898	88
Total Additions	5998	586



● Under Construction  
◆ Advanced Development

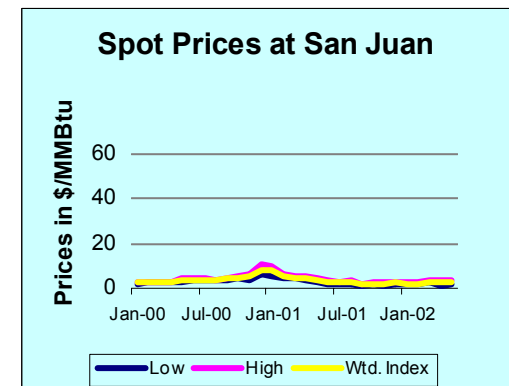
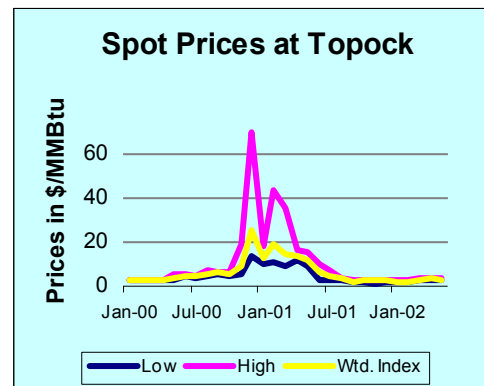
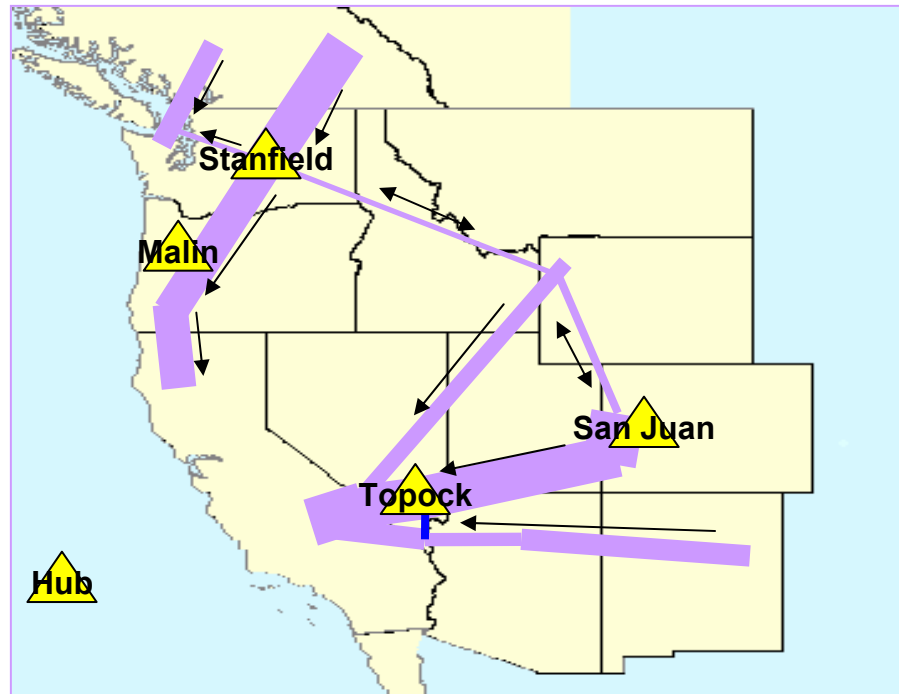
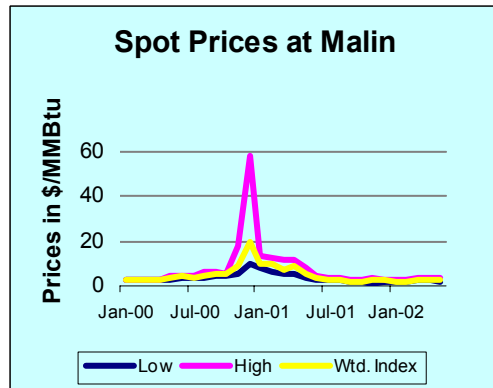
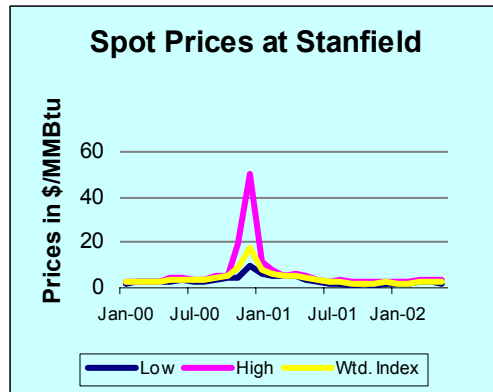
RMPA	Gas-Fired Gens (MW)	Related Gas Demand (MMcf/d)
Existing	3329	267
2002	249	24
2003	480	47
2004	50	5
2005	0	0
Total Additions	779	76

CA	Gas-Fired Gens (MW)	Related Gas Demand (MMcf/d)
Existing	32,542	3071
2002	3048	298
2003	4776	467
2004	1110	108
2005	500	49
Total Additions	9434	922

AZNMNV	Gas-Fired Gens (MW)	Related Gas Demand (MMcf/d)
Existing	9704	925
2002	2991	292
2003	7843	767
2004	1720	168
2005	600	59
Total Additions	13154	1286



# Poor pipeline gas allocation schemes and limited pipeline capacity exacerbate price volatility at market hubs during periods of high demand

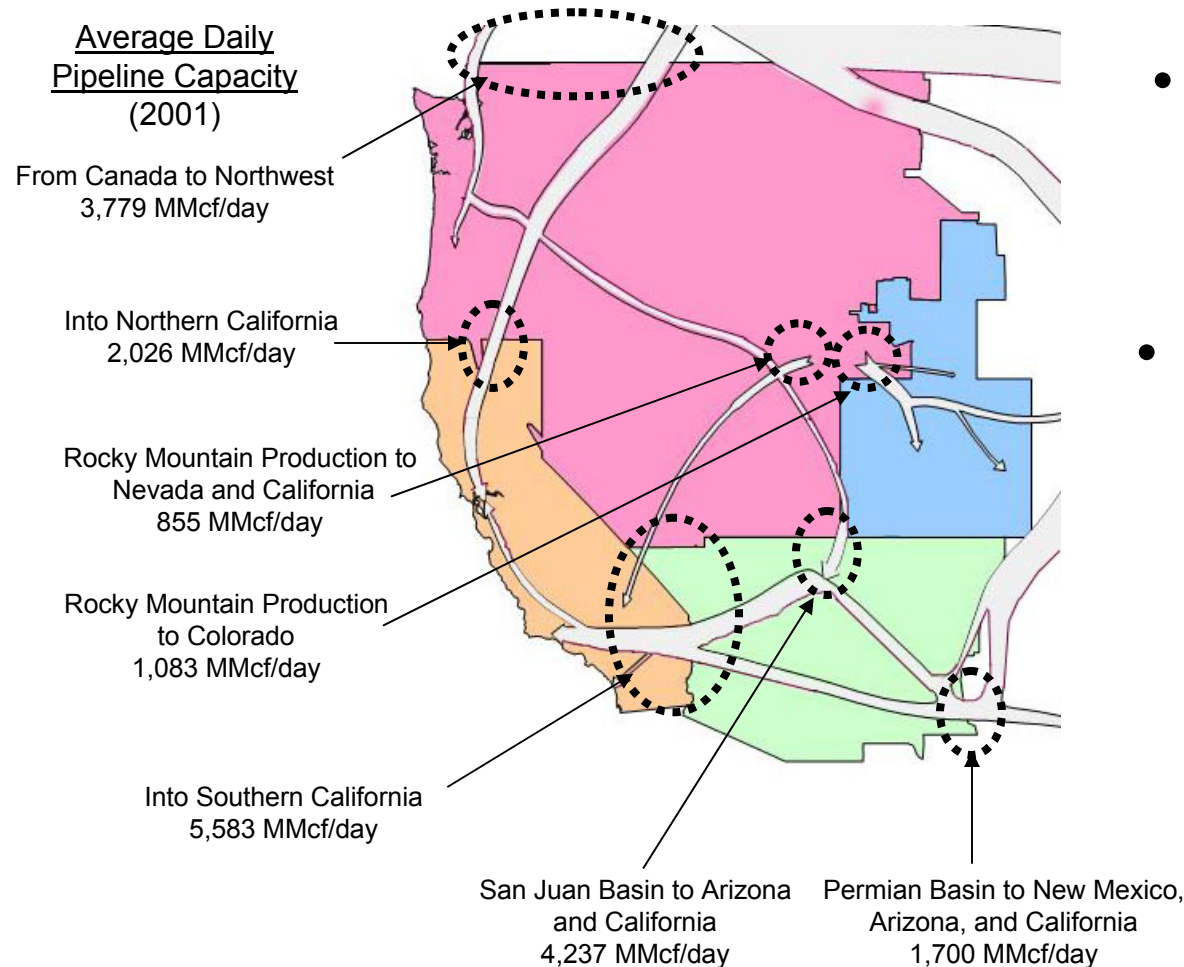


## **Factor 6: Gas Supply**

- **Inflated storage inventories reflect decreased demand in the current market and an anticipation of increased gas prices in the future.**
- **The Rocky Mountain production area requires more infrastructure to export developing gas supplies.**
- **Arizona, New Mexico, and Nevada have no meaningful gas storage capacity. Storage helps meet the peaking demand of electric generation.**
- **Reliance on traditional supply areas (e.g. Texas) can not meet growing demand because production rates are flattening out and local consumption is increasing. Further, U.S. eastern markets compete for Canadian exports.**
- **Clearly defined allocation of pipeline capacities and long-term contracting will facilitate gas supply planning.**
- **Load factors for California (at the border) and AZNMNV indicate that new pipeline capacity will be necessary to meet future gas demands. Electric generation will not be able to depend upon capacity release and/or interruptible gas transportation as in the past.**
- **Rig counts are dropping, indicating that the market is heading into a bust cycle and gas prices may rise in next few years.**

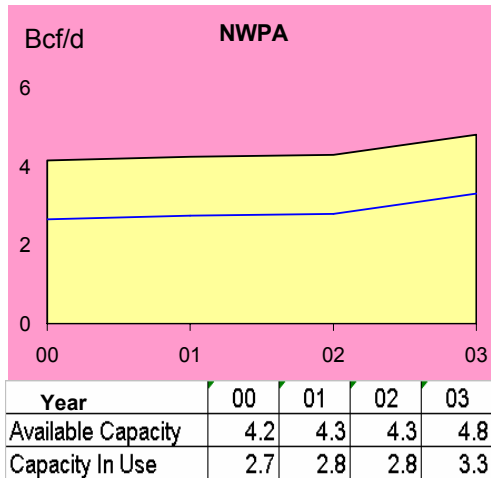
# WECC gas transportation routes and capacity levels at key locations

## Average Daily Pipeline Capacity (2001)



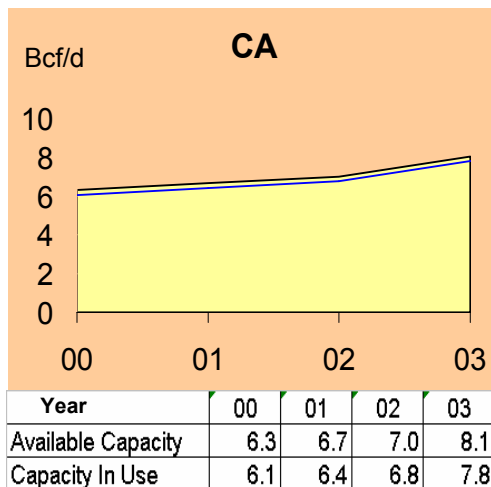
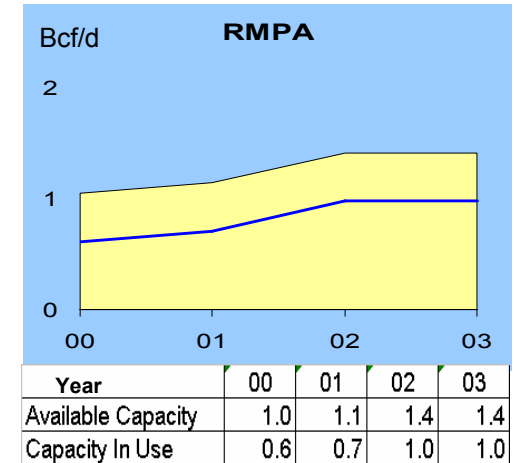
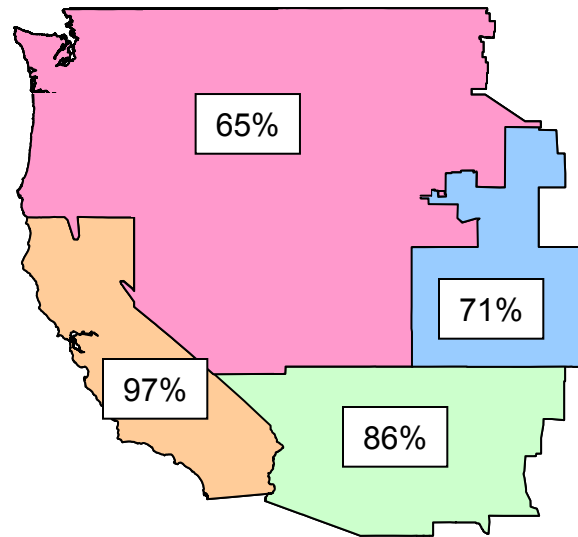
- **CA imports 85% of its natural gas requirements.**
- **California annual gas consumption by source in 2000:**
  - Canada 28%
  - Southwest 47%
  - Rocky Mountain 10%
  - In-state production 15%

# Pipelines in the Southwest and up to the California state line are utilized at a level close to their coincidental peak day levels

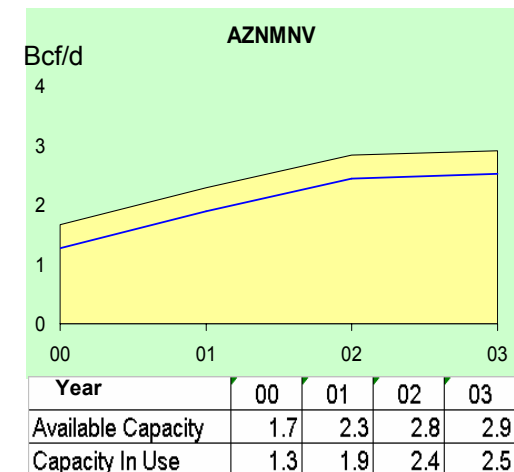


Pipeline usage\* in the WECC (in Bcf/day)

\* Coincidental peak flow serves as a proxy for pipeline capacity

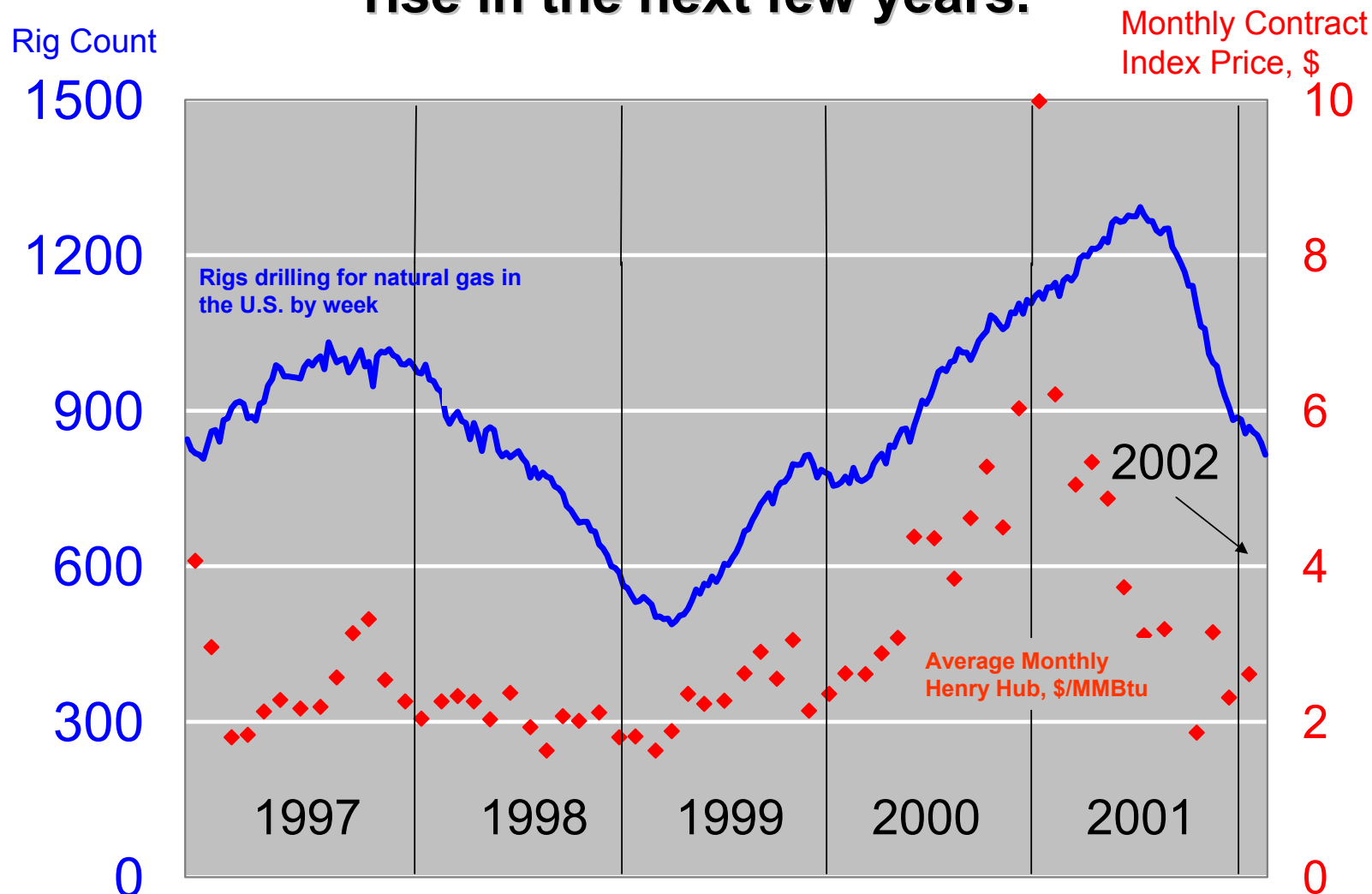


Reflects interstate flows at the California border



 **Coincidental Peak Flow**  
 **Average Flow**  
 **Capacity Utilized in 2002**

**Rig counts are dropping, indicating that the market is heading into a bust cycle. Gas prices may rise in the next few years.**



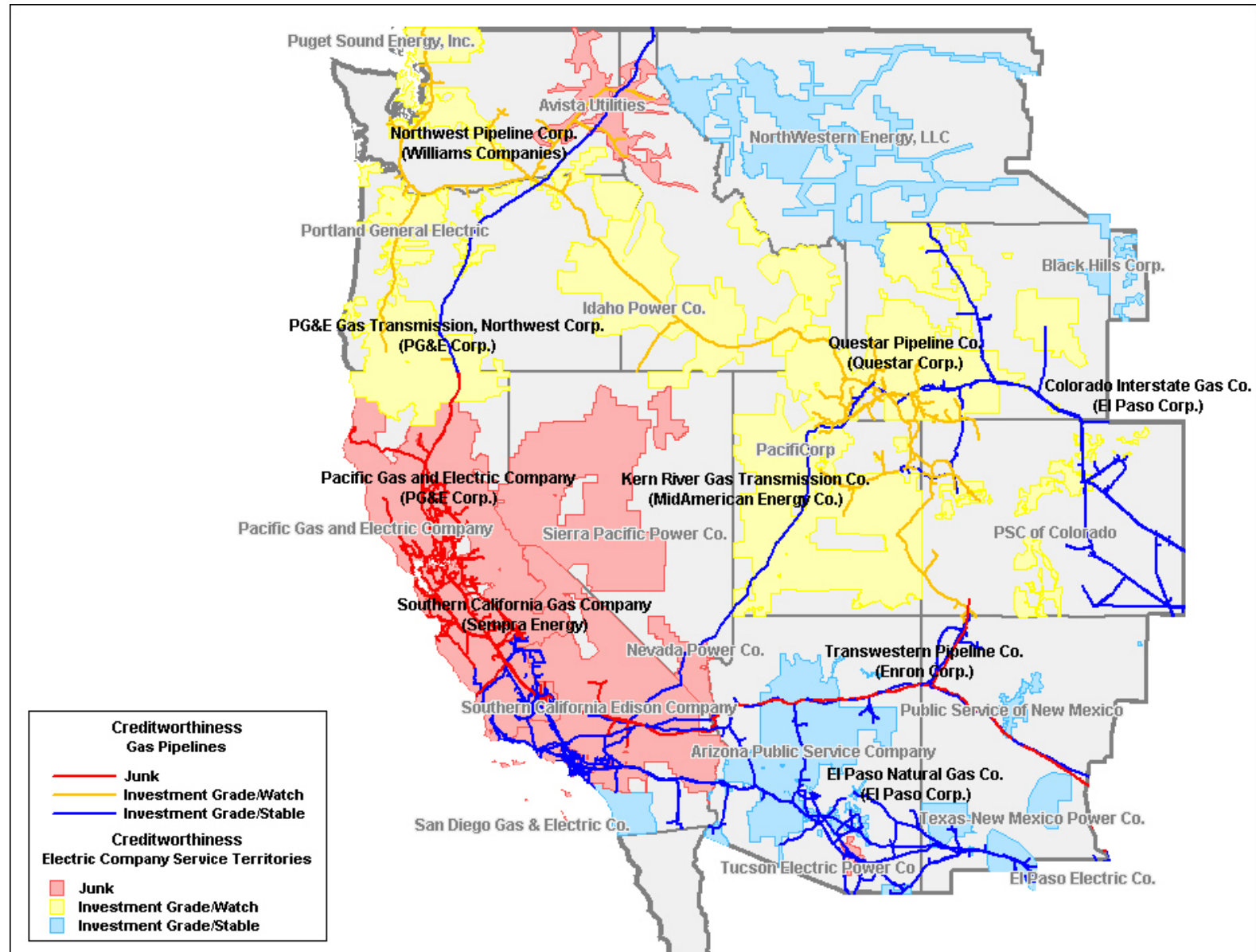
Source: Baker Hughes; Gas Daily. Prices not adjusted for inflation.

# **KEY FACTOR AFFECTING WESTERN MARKET INVESTMENT & INFRASTRUCTURE**

## **Factor 7: Creditworthiness**

- **Merchant generating companies are shoring up their balance sheets by cutting capital expenditures, canceling new plants, and selling assets - many hastened by recent bond rating downgrades.**
- **The credit crunch has impaired market liquidity and limited the pool of creditworthy counterparties for transactions.**
- **Low credit-worthy market participants cannot finance infrastructure expansions, assume new investment risk, and face limited participation in marketing and trading activities.**
- **Lack of transparent accounting policies have eroded investor confidence.**

# Downgraded credit ratings may impact infrastructure expansion across the West



Source: RDI PowerMap, Standard and Poor's ratingsdirect.com

# Western Market and Infrastructure Assessment

Supporting Data



# EXISTING AND ADDITIONAL NAMEPLATE CAPACITY (MWs)

<b>WECC</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Existing Nameplate Capacity	173,621	181,669	193,001	208,052
Nameplate Additions				
Operating	2,444	8,049	1,976	0
Under Construction	0	0	8,962	14,038
Under Development	0	0	393	1,013
Total Nameplate Additions	2,444	8,049	11,331	15,051
<b>CAMX-US</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Existing Nameplate Capacity	57,305	60,188	64,140	67,502
Nameplate Additions				
Operating	70	2,883	1,049	0
Under Construction	0	0	2,593	2,884
Under Development	0	0	310	478
Total Additions	70	2,883	3,952	3,362
<b>CAMX-MX</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Existing Nameplate Capacity	2,133	2,133	2,319	3,733
Nameplate Additions				
Operating	550	0	0	0
Under Construction	0	0	186	1,414
Under Development	0	0	0	0
Total Additions	550	0	186	1,414
<b>NWPA-US</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Existing Nameplate Capacity	53,798	55,903	58,040	60,026
Nameplate Additions				
Operating	50	2,105	126	0
Under Construction	0	0	2,012	1,696
Under Development	0	0	0	290
Total Additions	50	2,105	2,137	1,986
<b>NWPA-CANADA</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Existing Nameplate Capacity	21,424	22,070	23,321	23,347
Nameplate Additions				
Operating	674	646	237	0
Under Construction	0	0	932	26
Under Development	0	0	83	0
Total Additions	674	646	1,252	26
<b>AZNMNV</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Existing Nameplate Capacity	27,114	29,108	32,100	39,803
Nameplate Additions				
Operating	632	1,994	1	0
Under Construction	0	0	2,991	7,458
Under Development	0	0	0	245
Total Additions	632	1,994	2,992	7,703
<b>RMPA</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
Existing Nameplate Capacity	11,849	12,268	13,081	13,641
Nameplate Additions				
Operating	467	420	564	0
Under Construction	0	0	249	560
Under Development	0	0	0	0
Total Additions	467	420	813	560

Source: RDI PowerDat and NewGen June 2002

# YEARLY NET GENERATION (Mwhs)

WECC	1999			2000			2001	
COAL	224,015,184	35.74%		234,207,514	36.03%		231,587,486	37.45%
GAS	98,350,040	15.69%		138,669,203	21.33%		156,285,844	25.27%
HYDRO	219,829,313	35.07%		186,366,847	28.67%		131,130,618	21.21%
NUCLEAR	69,873,323	11.15%		74,164,272	11.41%		69,365,726	11.22%
OTHER	14,517,647	2.32%		14,303,072	2.20%		23,955,602	3.87%
FUEL OIL	190,958	0.03%		2,411,871	0.37%		6,026,189	0.97%
TOTAL	626,776,465	100.00%		650,122,779	100.00%		618,351,465	100.00%
<b>AZNMNV</b>								
Coal	70,316,096	54.47%		74,996,740	54.01%		73,105,300	53.01%
Nuclear	30,415,572	23.56%		30,380,567	21.88%		28,724,072	20.83%
Gas	14,550,979	11.27%		21,471,006	15.46%		24,139,261	17.51%
Hydro	13,801,046	10.69%		11,889,968	8.56%		10,900,694	7.90%
Fuel Oil	0	0.00%		128,998	0.09%		1,029,036	0.75%
Other	0	0.00%		0	0.00%		270	0.00%
TOTAL	129,083,693	100.00%		138,867,279	100.00%		137,898,633	100.00%
<b>CAMX</b>								
Gas	67,577,801	38.56%		90,002,677	45.04%		102,099,783	49.75%
Nuclear	33,371,858	19.04%		35,175,507	17.60%		32,391,225	15.78%
Coal	25,088,582	14.32%		26,250,845	13.14%		26,093,622	12.71%
Hydro	37,111,655	21.18%		36,333,775	18.18%		22,694,700	11.06%
Other	11,967,108	6.83%		11,662,024	5.84%		20,590,098	10.03%
Fuel Oil	124,323	0.07%		388,413	0.19%		1,376,130	0.67%
TOTAL	175,241,327	100.00%		199,813,241	100.00%		205,245,558	100.00%
<b>NWPA</b>								
Hydro	164,711,615	61.51%		134,846,607	53.42%		94,737,050	44.15%
Coal	82,509,737	30.81%		83,776,422	33.19%		83,396,466	38.86%
Gas	11,932,151	4.46%		20,938,783	8.29%		21,547,481	10.04%
Nuc	6,085,893	2.27%		8,608,198	3.41%		8,250,429	3.84%
Other	2,550,539	0.95%		2,641,048	1.05%		3,365,234	1.57%
Fuel Oil	87	0.00%		1,634,397	0.65%		3,289,800	1.53%
TOTAL	267,790,022	100.00%		252,445,455	100.00%		214,586,460	100.00%
<b>RMPA</b>								
Coal	46,100,769	84.41%		49,183,507	83.37%		48,992,098	80.82%
Gas	4,289,109	7.85%		6,256,737	10.61%		8,499,319	14.02%
Hydro	4,204,997	7.70%		3,296,497	5.59%		2,798,174	4.62%
Fuel Oil	19,414	0.04%		260,063	0.44%		331,223	0.55%
Nuclear	0	0.00%		0	0.00%		0	0.00%
Other	0	0.00%		0	0.00%		0	0.00%
TOTAL	54,614,289	100.00%		58,996,804	100.00%		60,620,814	100.00%

Gas Demand (in MMcf/day and by % of WECC Total)								
	2000		2001					
CAMX	2,261,092	57.4%	2,306,365	55.5%				
NWPA	909,197	23.1%	1,020,165	24.5%				
AZNMNV	461,362	11.7%	479,479	11.5%				
RMPA	304,758	7.7%	349,938	8.4%				
WECC TOTAL	3,936,409	100.0%	4,155,947	100.0%				
Gas Needs for New Generation (in MMcf/day and by % of WECC Total)								
			2001		2002e		2003e	
CAMX			1,020	63.5%	411	43.9%	409	30.4%
NWPA			272	16.9%	194	20.7%	156	11.6%
AZNMNV			244	15.2%	274	29.3%	734	54.6%
RMPA			70	4.4%	57	6.1%	46	3.4%
WECC TOTAL			1,606	100.0%	936	100.0%	1,345	100.0%
Spot Gas Prices (in \$/Mcf)								
	2000		2001		2002		2003e	
	High	\$69.92	High	\$43	High	\$3.65	High	\$4.65
	Topock	12/12/00;	Topock	02/15/01;	Topock	04/03/02;	Topock	01/03/02;
	Low	\$2.11	Low	\$1.20	Low	\$0.81	Low	\$3.65
	Stanfield	01/06/00	San Juan	09/25/01	San Juan	04/10/02	Stanfield	05/03/03

Source: CERA (Gas Demand); RDI NewGEN, RDI PowerMAP (Gas Needs For New Generation); EIA, Energy and Environmental Analysis, Gas Daily (SpotGas Prices)

<b>Pipeline Usage in the WECC (in Bcf/day)</b>				
	2000	2001	2002	2003
<b>CAMX</b>				
Non-Coincidental Peak	7.2	7.6	7.9	9.0
Coincidental Peak	6.3	6.7	7.0	8.1
Average Flow	6.1	6.4	6.8	7.8
<b>NWPA</b>				
Non-Coincidental Peak	6.2	6.3	6.3	6.8
Coincidental Peak	4.2	4.3	4.3	4.8
Average Flow	2.7	2.8	2.8	3.3
<b>AZNMNV</b>				
Non-Coincidental Peak	1.9	2.5	3.1	3.1
Coincidental Peak	1.7	2.3	2.8	2.9
Average Flow	1.3	1.9	2.4	2.5
<b>RMPA</b>				
Non-Coincidental Peak	2.1	2.2	2.4	2.4
Coincidental Peak	1.0	1.1	1.4	1.4
Average Flow	0.6	0.7	1.0	1.0

Gas Supply				
	2000	2001	2002	2003
As of 01/01/01, EIA estimates that the Western states have approximately 72.2 Bcf of proven reserves. At the 2000 annual production rate of 3.9 Bcf, there is approximately 18 years of production life. In addition, the Barlow study indicates that the Central Rocky Mountain region has insufficient take-away capacity relative to remaining (proven + undiscovered) gas supply of 171.8 Tcf. The study indicates that the region has highest remaining life of all US producing regions of approximately 95 years. In addition, Western producing states active rig counts for June 2002 are down 37% from the June 2001 reported figures.				

## FERC Actions

### Western Pipeline Development

**In Service '01/'02 – 1.2 Bcf/day**

**Under Construction – 1.6 Bcf/day**

**Pending – 1.4 Bcf/day**

## Creditworthiness of Major Electric Buyers Participating In Western Markets \*

<u>Electric Companies</u>	<u>Current Rating/Credit Watch</u>	<u>Previous Credit Rating</u>
<b>Junk Bond Ratings:</b>		
Avista Corp.	BB+/Negative/-- (4/29/02)	BBB-/-- (8/2/01)
So. California Edison Co.	BB/Developing/-- (3/5/02)	D/D (1/16/01)
Tucson Electric Power Co.	BB/Stable/-- (6/25/02)	BB-/-- (6/4/99)
Nevada Power Co.	B+/Watch Neg/-- (6/27/02)	B+/B (4/23/02)
Sierra Pacific Power Co.	B+/Watch Neg/-- (4/23/02)	BB/-- (3/29/02)
Pacific Gas & Electric Co.	D/--/-- (4/29/02)	CC/D (1/19/01)
<b>Ratings Above Junk Bond:</b>		
El Paso Electric Co.	BBB-/Stable/-- (4/29/99)	BB+/--(12/8/97)
Public Svc. Co. Of NM	BBB-/Stable/-- (4/29/02)	BBB-/-- (8/26/99)
Puget Sound Pwr & Light	BBB-/Watch Dev/-- (3/20/02)	BBB-/-- (10/30/01)
TX-New Mexico Power Co.	BBB-/Stable/-- (4/29/02)	BBB-/-- (8/26/98)
Black Hills Power Inc.	BBB/Stable/-- (4/29/02)	BBB/Stable/-- (2/15/02)
Montana Power Co.**	BBB/Stable/-- (4/29/02)	A- (10/97)
Pub. Svc. Co. Of Colorado	BBB/Negative/A-3 (6/24/02)	A-/A-2 (4/14/98)
Arizona Public Service Co.	BBB+/Stable/A-2 (4/29/02)	BBB/A-2 (3/29/02)
Portland Gen. Electric	BBB+/Watch Neg/A-2 (4/29/02)	A/A-1 (11/9/99)
Northwestern Energy, LLC	BBB+/Stable/A-2 (11/14/01)	BBB+/A-2 (11/2/98)
Idaho Power Co.	A-/Positive/A-2 (6/27/02)	A-/A-2(3/25/02)
PacifiCorp.	A-/Negative/A-2 (4/29/02)	A-/A-1 (11/9/01)
San Diego Gas & Elec.	A+/Stable/A-1 (4/17/02)	AA-/A-1+ (1/27/99)

\* Ratings from Standard and Poor's ratingsdirect.com.

\*\* Rating from Standard and Poor's Bond Guide, dated 5/02.

## Creditworthiness of Major Electric Sellers Participating In Western Markets \*

<u>Electric Companies</u>	<u>Current Rating/Credit Watch</u>	<u>Previous Credit Rating</u>
<b>Junk Bonds:</b>		
<b>AES Corp.</b>	<b>BB-/Negative (6/6/02)</b>	<b>BB/Watch Neg (2/15/02)</b>
<b>Calpine Corp.</b>	<b>BB/Stable/-- (3/25/02)</b>	<b>BB+/-- (12/8/1999)</b>
<b>Ratings Above Junk Bonds:</b>		
<b>Mirant Corp.</b>	<b>BBB-/Stable/A-3 (7/01/02)</b>	<b>BBB/A-2 (3/26/99)</b>
<b>Dynegy, Inc.</b>	<b>BBB-/Watch Neg/A-3 (6/25/02)</b>	<b>BBB/Watch Neg/A-3 (5/8/02)</b>
<b>El Paso Electric Co.</b>	<b>BBB-/Stable/-- (4/29/02)</b>	<b>BB+/--(12/8/97)</b>
<b>PPL Corp.</b>	<b>BBB/Stable/-- (5/29/02)</b>	<b>BBB+/--(4/25/02)</b>
<b>Xcel Energy, Inc.</b>	<b>BBB/Negative/A-3 (6/24/02)</b>	<b>A-/Watch Neg/A-2 (2/11/02)</b>
<b>Reliant Energy, Inc.</b>	<b>BBB+/Stable/A-2 (6/3/02)</b>	<b>BBB+/A-2 (4/20/00)</b>
<b>TransAlta Corp.</b>	<b>BBB+/Stable (6/21/02)</b>	<b>A/-- (9/22/00)</b>
<b>Duke Energy Corp.</b>	<b>A+/Stable/A-1 (1/9/02)</b>	<b>A+/A-1(4/19/99)</b>

\* Ratings from Standard and Poor's [ratingsdirect.com](http://ratingsdirect.com).

**Creditworthiness of Major Gas Pipeline Companies & Holding Companies  
Participating In Western Markets  
As Of 6/18/02 - Page 1 of 2 \***

<u>Pipeline Companies</u>	<u>Current Rating/Credit Watch</u>	<u>Previous Credit Rating</u>
Enron Corp.	D/--/-- (12/3/01)	CC/C (11/30/01)
Transwestern P/LCo.	CC/Watch Dev/-- (2/05/02)	CC/-- (11/30/01)
PG&E Corp.	D/D (1/19/01)	CC/C (1/16/01)
Pacific Gas & Electric Co.	D/--/D (2/11/02)	CC/D (1/19/01)
PG&E Gas Trans-NW	A-/Stable/A-2 (2/11/02)	A-/A-2 (9/19/00)
Sierra Pacific Power Co.	B+/Watch Neg/-- (6/27/02)	B+/B (4/23/02)
TransCanada P/Ls Ltd.	A-/Stable/-- (4/5/02)	A/-- (1/26/98)
Tuscarora Gas Trans. Co.**		
MidAmerican Energy Co.	A/Stable/A-1 (2/15/02)	A-/A-1 (2/8/02)
Kern River Gas Trans. Co.	A-/Stable/-- (3/8/02)	A/-- (8/21/01)
Questar Corp.	A/Negative/A-1 (6/20/02)	A/Negative/A (8/13/98)
Questar Pipeline Co.	A+/Negative/-- (6/20/02)	A+/Negative/-- (10/16/01)
Questar So. Trails P/L**		
Sempra Energy	A-/Stable/A-2 (4/17/02)	A/A-1 (1/4/01)
Southern CA Gas Co.	A+/Stable/A-1 (4/17/02)	AA-/A-1+ (7/2/01)



**Creditworthiness of Major Gas Pipeline Companies & Holding Companies  
Participating In Western Markets  
As Of 6/18/02 - Page 2 of 2 \***

<u>Pipeline Companies</u>	<u>Current Rating/Credit Watch</u>	<u>Previous Credit Rating</u>
El Paso Corp.	BBB+/Stable/A-2 (6/18/02)	BBB+/- (9/23/99)
Colorado Interstate Gas Co.	BBB+/Stable/-- (1/22/02)	BBB/-- (8/19/98)
El Paso Natural Gas Co.	BBB+/Stable/A-2 (3/5/02)	BBB/A-2 (3/15/99)
Wyoming Interstate Co. Ltd. **		
Williams Companies	BBB/Negative/A-3 (6/12/02)	BBB+ (5/28/02)
NW Pipeline Corp.	BBB/Negative/-- (5/28/02)	BBB+/- (10/16/01)
Southwest Gas Corp.	BBB-/Negative/-- (5/1/02)	BBB-/-- (12/15/98)
Paiute Pipeline Co. **		

\* Ratings from Standard and Poor's ratingsdirect.com.

\*\* Ratings unavailable.

# Credit Rating Categories

## Investment Grade Ratings:

- AAA** Extremely strong capacity to meet commitments.
- AA** Very strong capacity to meet commitments; small degree of difference from AAA.
- A** Strong capacity to meet commitments; somewhat more susceptible to adverse effects of change in circumstances and economic conditions.
- BBB** Adequate capacity to meet financial commitments; adverse economic conditions or changing circumstances more likely to lead to weakened capacity to meet financial commitments.

## Junk Bond Ratings:

- BB** Less vulnerable in the near term; faces major ongoing uncertainties and exposure to adverse business, financial or economic conditions will impair the insurer's capacity or willingness to meet financial obligations.
- B** More vulnerable; dependent upon favorable business, economic and financial conditions to meet financial commitments.
- CCC** Currently vulnerable; dependent upon favorable business, economic and financial conditions to meet financial commitments.
- CC** Highly vulnerable.
- C** Highly vulnerable to nonpayment; may be used when a bankruptcy petition has been filed or similar action taken but payments on the obligation are continuing.
- D** Failed to pay one or more of its financial obligators.

Plus/Minus: Denotes standing within major rating categories.

Watch / Negative: Rating under a watch for possible downgrade.